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THE PAPER TRADE JOURNAL.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIV.—NO. 36. NEW YORK, SEPTEMBER 7, 1895. WHOLE NUMBER 1114.

Trade Topics.

Method of Making Paper Tubes.

An improved method of making paper tubes is carried on by means of the devices herewith illustrated and described.

Figure 1 is a side elevation of a wet machine provided with an attachment for the operation of the process; Fig. 2 is an enlarged side view of the attachment, and Fig. 3 is an end elevation of the same, partially broken away.

2 indicates the vat, 3 the cylinder, 4 the couch roll, 5 the wet felt, 6 the guide roll, 7 the press rolls, and 8 guide rolls as usual in wet machines. The improvement consists in bolting to each side of the machine, between the guide roll 6 and the press rolls, detachable supports or standards, 9, having deep slots, 10, in their upper ends, forming bearings for the rolls 11 and 12, which bear loosely therein by their gudgeons, 13, the roll 11 resting upon the roll 12, while beneath the felt is the supporting press roll, 14. The roll or core 12 may be hollow or solid as desired, and if hollow may be suitably screw threaded at one end for the reception of a steam pipe when the roll is removed with the tube formed thereon. The roll 11 may be dispensed with, as the tube can be formed upon the core 12 alone without a pressure or squeezing roll bearing thereon.

The method is as follows: The pulp being drawn from the cylinder roll upon the felt is withdrawn therefrom and wound upon the roll or core, 12, until the desired thickness of the paper tube is obtained, when the core is taken out of the slot and removed to the drying room, where the tube is partially dried in any suitable way, as by attaching a steam pipe thereto, and the tube then being slid endwise off from the core the latter is returned to the machine. The tube dries on the exterior first and is removed before the interior parts are set, so that it is easily removed from the core. A number of these cores is provided, so that as soon as a tube is formed upon one another core takes its place. In this way the tubes may be produced very rapidly and cheaply, and the device is readily attached to any wet machine of ordinary type.

The method is simple, of few steps, and cheaply carried out, no complicated machinery being necessary.

Chattel Mortgages upon Mercantile Stocks.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

Nothing can be more exasperating to a creditor than to find that a merchant whom he has credited has given a preference to another creditor; but the regret comes in many cases too late for remedy, as the laws of most States permit this selection by the debtor. In order that those who have not had the personal experience may be forewarned, the main facts and substance of a recent decision upon an act of this kind are given below.

A company disposed of its business and stock on hand to a party for part cash, and the balance in notes; some of the notes having matured and not being paid, the company demanded security, and received, among other things, a chattel mortgage covering the stock; the mortgage was duly filed. After the mortgage was given the party remained in possession of the stock, and sold some of it in the usual course of business; he also purchased additional stock from other parties before and after giving the mortgage. Not succeeding in his business venture he left the State, with the purpose of not returning. While out of the State he met an officer of the company from which he had bought the business, and as further security gave it a bill of sale, and it took possession. One of the creditors, of whom he had purchased prior to the execution of the securities, attached the stock on hand, which was covered by the mortgage and bill of sale.

The Supreme Court of Nebraska, in discussing the case, said: "It is insisted that the chattel mortgage was given and received for the purpose of defrauding other creditors. This contention is not well founded. It appears that it was given for the sole purpose of securing a pre-existing debt, a portion of which was past due. This was a sufficient consideration, and protects the mortgagee to the same extent as though there had been a new consideration given when it was executed. It is true that the company knew, when the mortgage was taken, of the indebtedness to the other creditors, and that they were pressing payment, but this did not invalidate the mortgage. It is no longer a mooted question in this State (and in many others) that a debtor in failing circumstances may lawfully pay or secure one creditor to the exclusion of others. This is not an intention on the part of either to defraud.

"It is also contended that the fact that the mortgagor remained in possession and sold from the stock, and converted the moneys derived to his own use, shows the transaction to be fraudulent, and that the mortgage was a mere device to assist him in preventing his other creditors from collecting or securing their claims. While the possession of mortgage chattels by the mortgagor raises the presumption that the mortgage was fraudulent, yet it is not conclusive, and may be overcome by evidence showing that it was made in good faith; and this presumption of fraud remains only so long as the mortgagor retains possession. Here there is ample testimony to establish that at and some time prior to the levy of attachment the company had taken possession of this stock, holding it under the mortgage and bill of sale as security for a bona fide debt.

"The evidence discloses that, after taking possession of the stock under the mortgage and bill of sale, it sold the property in the usual course of business for the purpose of paying its debt. This method of sale did not conflict with any of the terms of the bill of sale, although it was not in compliance with the requirements of the mortgage or of the statute relating to the foreclosure of such instruments. Since the mortgagee was claiming under the bill of sale as well as the mortgage, it could make no difference, so far as the validity of the lien was concerned, that the property was sold at private instead of public sale."

While a mortgagee of chattels must dispose of the property according to the stipulations of the mortgage and the provisions of the statute governing such foreclosure of chattel mortgage, yet it is not the law that if he fails to do so in any particular, or if he omits to sell the property after taking possession of it, the mortgage is thereby invalidated and the lien lost; but in either case, when other creditors have a junior claim upon the property, the mortgagee must account for its value. Unless it exceeded in value the amount of the prior lien, it mattered not, so far as the mortgagor and his other creditors were concerned, whether the property was sold at private or public sale, or what the mortgagee did with it after it came into his possession.

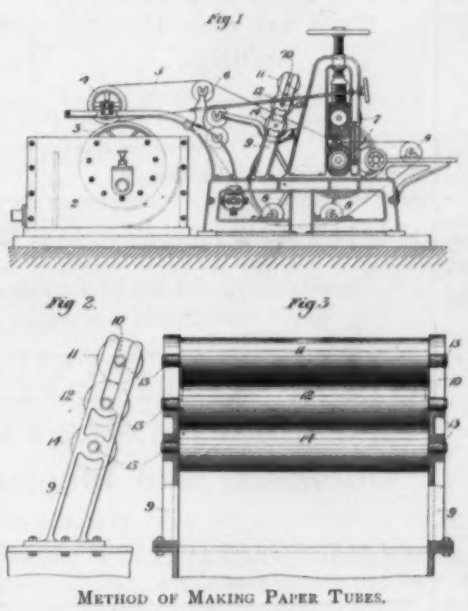
Chattel mortgages and conditional sales are the subject of statutory enactment in most of the States, and these should be consulted, both in taking a mortgage and also in relation to a lien of this kind, either alleged to have been given or found of record, for as to third parties, especially those holding other liens, such as attachment levies, &c., some lack of technical conformity may render them void. In the case referred to above such possibility was avoided by taking also a bill of sale, which thus rendered the mortgagee and grantee doubly secure, for what was weak in one was strengthened by the other, and this was made doubly sure by taking possession before other creditors could intervene. Prompt action, with knowledge of the laws, both as to the strength and weakness, secured to the company the purchase money. While such measures may seem harsh and overreaching to some, safety lies in them.

From Apprentice to Superintendent.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY B. F. FELLS.

The successful apprentice is likely to make a successful superintendent. Success does not come to all—that is, the kind of success which one likes. The aggressive man has success which frequently carries him to the top of the ladder. This kind includes some elements. For instance, one who can hold his temper in the hour of defeat, and can submit gracefully to the inevitable, possesses some of the elements which go to make up the successful man. He who is not afraid to work, but is willing to "earn his bread by the sweat of his brow," who will educate himself for his business, studying the trade journals, and by observation and with his education apply good common sense to practical work, has many of the requirements of the successful man. An apprentice of this sort will get along all right. When he becomes a superintendent other elements are needed in order to hold the position.



METHOD OF MAKING PAPER TUBES.

A good superintendent must make a study of his business, be "up to date" in knowledge, be capable of explaining the difference in things which depend upon his judgment, be competent to discuss the processes of manufacture; he must realize the dignity of his position, have sufficient judgment to know how to approach and deal with men; take a philosophical view in general and as philosophically make up his mind that he will overcome all sorts of adversities.

Such a man can superintend a paper mill economically and profitably, and also maintain discipline and promote comfort. Of course the details of the machinery and equipment of the mill must be perfectly familiar to him. Great accuracy and management of the details of all processes are needed in these days of small margins and excessive competition. Some time ago in a machine shop a device consisting of a short steel rod fitting into a hollow cylinder, the rod being three-quarters of an inch in diameter, was so perfect that the rod would slide freely in and out, but it was found that if the rod was taken out and held in the hand only a few seconds, the slight expansion caused by the warmth of the hand was enough to render it impossible to insert it again until it had been allowed by gradual cooling to regain its normal size. This is extreme accuracy and it hardly seems possible that a paper mill can be governed on a similar principle and with equal accuracy. Yet accuracy so far as is possible is a valuable feature in mills and especially at the first stages of preparatory work.

For illustration, there is one department in paper mills which is too often allowed to run itself—that is, the buying and sorting. The buyer, as a general thing, has charge of the sorters. He is away buying stock the greater part of his time, and he usually puts the sorting room in charge of someone whom he can wind up to run just as long as he expects to remain away. If he stays a day longer his man runs down, and the sorting department becomes demoralized; the sorters know that their work is not properly examined, and naturally they become careless. The grades get mixed or are not kept up to the standard; they are sent to be cooked and no one knows that there is anything wrong until the paper made from this mixed stock is sent out to fill the order, and as the buyer is always a closer examiner than the seller, if the paper stock is not up to sample he will discover it at once, and will either return it or make a heavy claim. The manufacturer is then the loser, not only in cash, but in reputation.

To maintain accuracy in the wood room, cutting department, rag room, &c., correct grading of the stock is necessary, and correct assorting means accuracy. There are some things which must necessarily be quite accurate if efficient results are desired. Take the valves of the digester, for example. They should be free from leakage and easy to open and close. Unless accurate in construction they will leak at the seat and give bother. Other defects cause plugging of the valves with pulp. Ordinary iron valves will not do, as a rule, phosphor bronze or lead lined types being the best and not affected by chemicals so readily. Lead lined valves are popular because relining can be done when the valves get worn. Many valves are destroyed by workmen closing them upon a piece of hard pulp.

When the seat is injured so that a leak is started, it is advisable to resort to grinding, making it smooth and accurate. Leakage of valves in any part of the mill is indicative of waste and shiftlessness. Nine times out of ten grinding the seat of the valve effects a cure. We are apt to allow the leakage to go right on under our nose, as it were, and not wake up to its enormity until it has brought on some trouble. Yet we learn once in a while of cases in which valves are ruined in a short time comparatively by the seat being ground away. A light grinding of the seat with a tool which is specially made for the purpose ought not to spoil any valve. A man may grind too much, and so the seat is worn. Some men in a machine shop will almost grind a tool away before they get it in working order, always finding fault with either the temper of the tool or the grindstone, while other men come whistling along and after a few light touches are back to their work with the tool all right. Just so in grinding valve seats. A few light touches accurately applied will do the work quickly and correctly.

Accuracy means a larger production. Of course higher speed results in a larger proportionate production, but the speed is something which the superintendent, as a rule, cannot conveniently alter without upsetting calculations in the power department. A new superintendent may go into a mill and remove pulleys and put on some of different diameter with a view to increasing the speed, and can order the driving shafting to be speeded up so as to run the machines faster, but this creates complications not easily handled. If he desires to make a mark by turning out a larger production, let him manage according to the best methods and work everything to the best advantage.

The superintendent has a right to go anywhere. If the mill is run by steam power give the fireman a hint that you have an eye on him and will in the future expect him to keep the boilers free from scale, and that he must not allow heavy sheets of it to accumulate on the tubes or crown sheet, nor try to heat water through innumerable thicknesses of it, regardless of the fact that one-eighth of an inch calls for almost 15 per per cent. more coal to heat the water than would be needed with clean tubes and sheets. Have him examine the gauge cocks several times each day to see if the water levels are all right and not rely wholly upon the gauge glass. Don't permit him to have the furnace doors open a second longer than is absolutely necessary, and then keep the damper closed if possible. Each time that cool air strikes on the boiler shell it not only costs money to furnish coal to heat it again, but it also is liable to damage the plates. The fireman respects the superintendent who insists on proper work. Firemen are usually looking forward to be engineers and will receive instruction in good humor.

A system of accuracy in the boiler room will help wonderfully toward even speed and saving of fuel.

(To be continued.)

The Suspension Cableway.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY W. H. WESTON.

The effectiveness of the suspension cableway is so great that it should receive the attention of builders on heavy construction of almost every kind. The general plan of the cableway is very simple, and the apparatus is easily operated on a vast extent of work. The first cost is not at all excessive compared with the amount of work that it will do, and, in fact, in many instances it is very low. The origin of the plan of moving a load suspended from a truck traveling on a cable is probably hard to tell; but it was necessary to work out the details of construction properly before the cableway became a valuable piece of machinery, and this having been done it holds a commanding position in a very large amount of construction work.

People who have large contracts on hand would do well to consider thoroughly the opportunity which it offers to facilitate work and reduce its cost. As a piece of property for a man who is taking new contracts all of the time it is a valuable equipment, for it can be readily transferred from one job to another and easily set up, and in this way it will often prove to be one of the best paying investments that could be made. Its possibilities on practical work are perhaps much greater than is supposed, for not only are there hundreds of places similar to those where the cableway has been used, but there are a good many kinds of work to which the cableway has not been applied, and where it could be to great advantage, the saving effected of course depending on the special nature of the work to be done in any given place.

The operating expense chargeable directly to a cableway is comparatively small, the only charge of any moment being the running of a hoisting engine at one end of the line. The size of the engine depends on the amount of load that it is wished to hoist at once, and the speed at which it is to be hoisted and transferred. The engine should be built specially for the purpose, and it is also very important to have it strongly made, easy operating and equipped with brakes working quickly and positively. The engine should be double and have reversible link motion.

The prominent kinds of work on which a cableway is available are bridge piers, masonry dams, stone arches, retaining walls, breakwaters, canals, excavation on various kinds of work, quarrying, &c. Cableways have been built and successfully used up to

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about 1,500 feet span, and capable of handling a load of 7 or 8 tons, and thus it can be seen that they can be operated on very long spans, and that they will handle as heavy loads as are ever needed. By increasing the size of the main cable the span and the load can both be increased. The system consists of towers with a wire cable traversing the space over the given work, the towers being at each end of the span and the cable being securely anchored back of the towers. On this cable travels a truck of suitable form so as to stay on the cable properly and hold the blocks for hoisting the load. The construction of the towers is not difficult or expensive, and the whole equipment can be set up at a comparatively moderate cost. The engine can be located at one of the towers, or at a point removed from it if occasion requires. It sometimes facilitates the work to place the engine at a point away from the tower if by so doing the engineer can more readily overlook the work along the whole length of the span, and thus do the hoisting, transporting and lowering with greater precision and speed.

It is sometimes of much advantage to use movable cableways on such work as a canal; that is, having each tower and anchorage upon a platform heavily weighted and which travels on rails laid along the bank. In this way as the construction progresses the cableway can be readily placed in successive positions to correspond with the work. Of course this is only applicable to spans of moderate length. On some pieces of work it is of advantage to have more than one, perhaps two or three cable ways set parallel at a given distance apart. In this way all parts of a structure, such as a dam, &c., which might be a hundred or more feet in width, could be reached easily, and the stone thus placed directly in position, without the use of supplementary derricks along the line. On most constructions the space along the line to be operated is not over 40 or 50 feet, and the cable is at a good elevation; the load can then be swung out of perpendicular sufficiently to reach any part of the work, either by hand power or by means of a snubbing post. Another great advantage is that the cable is entirely clear of the work along the whole line, and thus does not interfere with it in any way, and when spanning a river it will not be reached by high water.

Correspondence.

WESTERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., September 6, 1895.

The activity in paper and pulp circles here is really gratifying. The completion of the Cataract-Pettebone paper mill is something over which the company has reason to congratulate itself. The conservative men in the company decided to postpone any more expenditure when the work was half done, until they saw that the outlook would justify it.

I had a talk with Superintendent Hollingsworth, who enjoys the confidence of President Gaskill, and to whom all inquiring correspondents and representatives are referred. Mr. Hollingsworth is a fine fellow, and is considered one of the best paper makers in the State. He asked me to correct the false impression prevalent that the company is going to put in a new paper machine. It has not reached that point as yet, but no doubt will be brought to that position where it will have to increase its output in order to keep up with the demand. The work has begun on the mill building, and it is hoped to have the wall all up and inclosed before the snow flies.

There have been two quite distinguished looking Japanese here during the past few days as guests of J. L. Campbell, the well-known millwright of the Niagara Falls Paper Company. The "Japs" have day after day visited the "big mill," as it is called, and I thought something was in the wind. One of them is Jchiro Murata, president of the Fuji Paper Company, of Tokyo, Japan, and the other is Mr. Canda, his superintendent. President Murata is a tall, finely built Japanese gentleman, and, as he informed me, a reader of THE PAPER TRADE JOURNAL, which publication reaches him even in far off Japan. He talks English fluently, and is one of the progressive men of his age in his country. He has a three machine mill located about 100 miles from Tokyo; and, by the way, they spell Tokyo differently than when I went to school. I asked Mr. Murata if it wasn't Tokio, but he laughed as he said: "Oh! that is the way the common people spell it. We always write it T-o-k-y-o." I asked him if it was not on the same principle that some Smiths spelled it Smyth. He thought that might be so. Mr. Campbell, of the Niagara Falls Mill, went out to Japan and helped build the mill of the Fuji Paper Company. It is a 25 ton mill, producing news, book and strawboard. There are two Fourdriniers, one 84 and the other 98 inches, and one 84 inch cylinder. There are three New American water wheels, giving 1,200 horse power.

The secret of their visit to America now is to post themselves on all of the modern machinery used in paper making, and to look over the most recently constructed mills. They have discovered a fine fall of water, and their engineers calculate that fully 4,000 horse power can be generated, and there President Murata proposes to erect a six machine mill, making it the largest and most complete paper mill in the East. President Murata says that he will back Yankee pluck, endurance, ingenuity and enterprise against the world. He has received overtures from French and English paper machine makers, but has no time for them. America suits him, and he wants American ideas. The machinery for his first mill, which was erected in 1888, was secured in Dayton, Ohio, the Black & Clawson Company and the Dayton Globe Iron Works furnishing the most of it. The grinders used are of the D. T. Mills pattern. This time the order will be important, and while President Murata was satisfied with the first order he wants to post himself as to the most modern machinery now in use.

Japan is very progressive. Its ten paper mills, however, do not turn out more than 65 tons of paper a day, and this is absorbed in the publication and newspaper establishments in the large cities. The foreigners have gone East from here to continue their investigations, which they will do for the rest of the month.

The State Board of Claims has been in session at Syracuse this week to hear the evidence for the Skaneateles mill owners for damages by reason of the water power being shut off in 1892. George M. Beebe, Hugh Reilly and Wilbur F. Porter were the commissioners present. Attorney-General T. E. Hancock represented the State. The first case taken up was that of the Lakeside Paper Company. Edwin Nottingham, of the firm of Knapp, Nottingham & Andrews, of Syracuse, appeared for the paper company. The claim against the State which this company has made is for $4,826 for the loss of profits in the business by the shutting off of the waters of Skaneateles Lake for a period of seventy-eight days in the year 1892. The paper company submitted a number of witnesses, including John L. Seager, Forest G. Weeks, Horace Bradley and H. Lester Paddock. A quantity of evidence was admitted which had been secured from witnesses sworn in the case of John E. Waller against the State. This case is of the same nature and so was readily admitted in this matter, along with a quantity of documentary evidence. The same is also true in the matter of the Skaneateles Paper Company's claim, which was carried to the Court of Appeals, where the awards of the commissioners were reversed. The State shut off the water during part of February in 1892 and during the months of March and April. Attorney-General Hancock in his address to the commissioners contends that he intends to try those old claims of Mr. Waller and the Skaneateles Paper Company upon the question of the State's liability instead of the question of damages alone, although the Court of Appeals held against him on this point. Forest G. Weeks, individually and in connection with the Lakeside Paper Company, has claims also against the State.

W. E. T.

SAULT STE. MARIE.

[FROM OUR OWN CORRESPONDENT.]

SAULT STE. MARIE, Ont., September 4, 1895.

American capital and industry, American push and enterprise, and American grit and invincibility on Canadian soil are oddities of the rarest type. Such are the conditions here. The bone and sinew of the States are lodged with a stateliness and grandeur of purpose at the Canadian Soo, otherwise known as Sault de Ste. Marie, in the construction of probably the largest paper and pulp mill plant in the world. The continent has not its counterpart, while all of the great paper producing sections of the Union, East, West and Central, or North and South, are not represented similarly in a single plant, although their combined interests may be greater or more far reaching in effect.

As far as I am able to ascertain upward of $10,000,000 will be expended at the twin cities of Sault Ste. Marie within the next two years. There is little reason to doubt this, as I am reliably informed of the intentions of the Sault Ste. Marie Pulp and Paper Company. The limit of time in consummating these vast enterprises may be less or it may exceed the estimate. In any event, the improvements are inevitable; that they will prove advantageous to American and English trade there is little doubt.

The Canadian plant is now well under way, and is already an interesting place to inspect. By next fall, 1896, the same company promises progress on the American side of the Ste. Marie River, and seals its good designs by a purchase of a canal nearly a mile in length, which with its improvements will entail an expense alone of $2,000,000. Thus American and English trade will be catered to, without interference or molestation of one with the other. In view of duties or customs, the Canadian plant will confine its operations and the distribution of its output to Canada and England. Duties are, while not excessive, of consequence, and certainly considerable enough to bring about a definite plan in a limited scope—limited in one way and limitless in another, for what field is worthy of greater attention than Canada and its mother country? Or what field is possessed of greater facilities and of greater fertility in the art of wood pulp making?

This afternoon I called upon F. H. Clergue, president and general manager of the prospective companies, at the Canadian Soo. He is a pleasant Easterner, with a frank, determined confidence which bespeaks an indefatigable life. A few moments' chat with him shows his metal; a little tour about the establishment displays his method. Both are faultless and impregnable. The other members of the company are presumed to remain incog, but as a matter of fact are generally known in the American trade, where they exert an influence and a commercial sway which are honored and esteemed by their brethren. However, Mr. Clergue is the head of the concern. He has erected a neat residence of fine architectural taste near the nearly completed mill, and is bestowing the best attention that an experienced business man can give.

First, as to the Canadian plant. The Soo on that side is a thrifty little city of probably 5,000. A long time ago the Government, in one of its generous transactions, disposed of possibly the most valuable water service in the world. This power comes from Lake Superior, less than a quarter of a mile away, and has a fall of 20 feet. The town became hard pressed, and was unable to meet the accruing interest. While in these straits the power was disposed of to the Sault Ste. Marie Pulp and Paper Company, a syndicate of wealthy Americans, for $375,000, or for figures near that sum. There were considerations of an important character. In the first place the purchasing company agreed to expend $250,000 on some kind of an enterprise the first year. Thus the town assured itself of a solid future, and has never been able since to kick itself for the transaction; for the company has more than fulfilled its promises. The performance of the same continues, and the end is not yet, nor will it be for several years.

The plant under course of construction is a pulp mill, and a splendidly complete and representative one at that. Half of the mill will be ready for operation next month, while the entire mill will be completed within a few months. Machinery, to a great extent, is in position, and there is every palpable indication that product will be finished within thirty days from date. This mill alone will have a capacity of 200 tons a day and a water power equal to 20,000 horse power, undoubtedly double the facilities extant in any part of the world under substantially similar circumstances. At present the work is nearing consummation, and the second floor of the stone structure is up, and already it presents a commanding appearance. The construction is of steel and sandstone, which is quarried on the immediate site of the mill. It greatly resembles red granite or Bedford buff and makes good building material. Between 600 and 1,000 workmen are employed, and by the end of this week the principal part of the labor will have been finished. Within a few paces the company manages and controls its own sawmill, while within a stone's throw is located the company's own machine shops. Every facility for rapid work is at hand and the equipment is minutely complete. In short, work has been in progress only a few short months, and this instance of swift labor will prove a record breaker in this country.

The basement is unquestionably the interesting department. There can be found the twenty-four American turbine water wheels, which, I am proud to say, were manufactured at Dayton, although delivered and sold by the Dayton Globe Iron Works' Canadian representatives, Kennedy & Son, at Owen Sound, Ont. Twenty-four additional water wheels will be installed in the duplicate plant adjoining, which, in short, will be simply a part of the main pulp mill, forming in all a grandly equipped plant. The water from Lake Superior rushes through an immense canal constructed by the Government, later sold to the Canadian Soo, and in turn transferred to the paper company. It flows full tilt into the wheels and through the basement, unrestrained, unimpeded, into the waters next to the mill. This latter channel, constructed through solid rock, is now about completed, the latter part of this week witnessing the finish. It will contain fully 20 feet of water, and will afford free entrance to either Lake Superior or Lake Huron for tugs and vessels. Thus the water facilities, in addition to the Canadian Pacific Railroad facilities, will complete a system of transportation par excellence.

Original to the last degree is the water power plan of the company. There is not another like it in existence, nor will there be another until the company completes its American adjunct across the river. From the grinders above the pulp falls into stuff chests, and by gravity is delivered to the screens, thence by gravity into the second series of stuff chests, and from thence is transferred to the wet machines. The process is as simple as the alphabet, and needs only to be followed once for a complete understanding.

Mr. Clergue is an able climber. He skipped with his heavy avoirdupois over the half completed building and rocky prominences with an alertness which would have done credit to an Edward Whymper, who scaled the Matterhorn eight times with varying success. He showed that his daily attentions to the work had added a peculiar skill, and perhaps a remarkable charm, to the duty. The structure is immense, without a doubt, although the project is too great to admit of a mature idea upon a cursory investigation.

In walking through the mill, which is yet unroofed, I found a half hundred American visitors on a similar mission, and was informed that hundreds called daily. There were twelve or fifteen of D. T. Mills' pulp grinders from the Jenckes Machine Com-

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pany, Sherbrooke, P. Q., in position; almost as many machines from the Bagley & Sewall Company, Watertown, N. Y.; a dozen screens from the Wendler Machine Company, Carthage, N. Y., and two from the Milliken Company, Portland, Me. In all there will be used forty-four grinders, forty-eight turbines, forty-eight screens and forty-eight wet machines. These are simply for the one mill, with a capacity of 200 tons, half of which output will be ready for the market within the next month.

Near the present site of the pulp mill within the next few months continual scenes of activity will be witnessed, for a sulphite and a writing and wrapping paper mills will be erected. In all the expenditure on the Canadian side will amount to upward of $5,000,000, a half million having already been spent.

Mr. Clergue tells me that the Government also presented the company officially with a land grant of 640 acres in the district of Algoma. This is a feature of immense value, and cannot very well be computed in handy figures. This territory abounds in spruce, the timber to be used without exception, and the supply is, unequivocally, boundless. Timber will be floated from above and below, that is from Superior or Huron, as the company may wish. The latter course just now will entail less expense, and will be more freely patronized. During the entire year the company's own lumbermen will operate the woods, and when the plant is in full swing upward of 1,000 men will be employed. As is well known, a thoroughly modern and complete pulp mill does not necessitate a large force of workmen.

The boiler house is also of stone, and has been erected in view of the construction of the sulphite mill. However, the other paper mill will be operated by water power.

As to the American plant, at Sault Ste. Marie, Mich., the larger city of the two, the proprietors are willing to say little. They point to the expenditure of $2,000,000 for a waterway as an overburdening evidence of its value.

There is little doubt of their honest intention, and when these two immense concerns are under complete operation no lake ports in the country will stand as better candidates as a twin metropolis than the sister cities of the Soo. M. V.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, September 5, 1895.

This week ushers in the fall season, when business generally begins to take on renewed activity.

In local paper trade circles the present week has brought an increased volume of orders compared with last week; but trade was very much interrupted last week because of the Knights Templar festivities, and because of its being the last week of the month, when orders always fall off, even in brisk times.

The increased demand for paper is not therefore good evidence of improvement due to the fall season.

That the coming weeks will show a big increase in the consumption of all lines of paper is not to be denied. A heavy demand for paper is always looked for in the fall, and as industrial conditions have been improving for some time past, it is only natural that paper dealers and manufacturers should expect a big trade before the snow flies.

While the jobbing trade was very quiet last week manufacturers supplying the city papers had an extra heavy week. Each of the city dailies made special efforts during the knights' stay in town to cater to that particular interest. Not only were the several papers increased as to size, but the daily editions were much enlarged, so that the consumption of news during that week was fully 60 per cent. above the average.

The exports of paper and books from this port for the week ended August 30 also show a considerable increase over the exports of the previous week. For the week under review the values are given as: Books, $4,180; paper, $4,671, as compared with the exports of the previous week, book, $2,112; paper, $2,505.

Low water is yet reported from many of the paper making districts of New England, some places being more troubled than at any time during the summer. While mills are running full time, the production, it is claimed, is very much curtailed.

Paper stock importers state that the call for rags, &c., has much improved since the first of the month. A fair volume of business was booked this week and inquiries are quite numerous. Business during August was very quiet.

The imports of paper stock at this port for the month of August show receipts as follows: 3,484 bales of rags, 2,305 bales of waste papers, 2,067 bales, 394 coils of manillas, 1,203 bales of flax waste, 3,307 bales of wood fibre and 1,890 bags of sizing.

Compared with the imports of July the receipts show a decrease of 4,277 bales of rags, a decrease of 1,203 bales of waste papers, a decrease of 1,000 coils of manillas, a decrease of 1,624 bales of flax waste, while in wood fibre the decrease is 1,639 bales, and in sizing 1,818 bags. A better showing is looked for during the remainder of the year.

The paper stock business of the late C. A. Cheney will hereafter be carried on by Edward Butterworth & Co. in connection with their New York house. The Boston office will be continued at the old place, No. 60 Federal street, under the management of Charles H. Wood, who was for many years connected with Mr. Cheney.

Adna T. Denison, representing W. H. Parsons & Co. in this market, was lost to sight all of last week but showed up all right on Monday. Mr. Denison was out in the Knights Templar parade with the Portland Commandery, and the long march, with the entertainments that followed during the week, weakened him a little. He is in good fighting trim now, and they say that he was the finest looking knight that the Portland Commandery had in the big conclave parade. He looked handsomer than a drum major.

A. S. Laurie, representing Shuler & Benninghofen, of Hamilton, Ohio, manufacturers of the "Hamilton" felts, was in town during the Knights Templar Conclave week, accompanied by his wife and father, who is an old Mason. Mr. Laurie and party left town last Friday en route for the West.

George C. Sherman, secretary of the Taggart Brothers Company, Watertown, N. Y., and of the American Paper Manufacturers' Association, has been visiting Nova Scotia during the past week, accompanied by his wife. Mr. and Mrs. Sherman stopped over in town yesterday to see the baseball game. While here they quartered at the Parker House.

Benjamin M. Jackson, of Linton Brothers & Co., Pawtucket, R. I., is in town today visiting trade friends. Mr. Jackson reports a fair volume of business. "Nothing to complain of on the volume of business doing," he said, "but——" and then he winked his other eye.

Representatives of the trade seen in town during the past few days say that business has improved a little of late, and they are encouraged to think that a turn for the better has come.

Among the week's visitors were: A. N. Burbank, A. C. Moore, S. T. Coy and Charles Robertson, of Bellows Falls, Vt.; W. A. Whitney, of Sunapee, N. H.; ex-Governor Cheney and Frank P. Carpenter, of Manchester, N. H.; James Linton, of Pawtucket, R. I.; W. D. Russell, of Turner's Falls, Mass.; Charles S. Mayo, of Lawrence, Mass.; Fred Temple, of Pepperell, Mass.; Mr. Williams, of Worcester, Mass.; C. H. Southworth, of South Hadley Falls, Mass.; L. F. Hayward, W. D. Judd and Mr. Williams, of Holyoke, Mass.

Wm. H. Claflin returned last Tuesday from his summer sojourn at Newport, R. I.

Wm. F. McQuillen, of the A. Storrs & Bement Company, has gone to his camp at Lock's Mills, No. 2, for a couple of weeks.

James B. Forsyth left for Moosehead Lake last Saturday, to be gone two weeks. He was accompanied by Mrs. Forsyth and fishing tackle for two.

Col. S. P. Train will leave town on Friday morning for New York to take in the big yacht race, and he has so placed his bets that he stands to win something, no matter which yacht takes the cup. The colonel has made a favorite of the Defender, however, on pure Yankee principle.

Col. Hugh Cochrane, of the Cochrane Chemical Company, and H. M. Knowles will also take the train for New York in the morning to see the yacht race.

G. F. Evans states that the number of orders received for the Evans friction cone pulleys during June, July and August (the dull period of the year) was larger than booked during any three months since the cone pulleys were put on the market.

DELESDERNIER.

ON THE WING IN BERKSHIRE.

[FROM OUR SPECIAL CORRESPONDENT.]

PITTSFIELD, Mass., Sept. 2, 1895.

The paper mills in Western Massachusetts are slowly but steadily increasing their product, and all are running full time, to the great gratification of their help and of the fortunate localities in which they are situated. The honorable character and righteous business methods of the Western Massachusetts paper makers have ever been such as to prevent the outcrop of any labor difficulties, and consequently the localities in which these mills are planted have always been free from setbacks caused by labor strikes and have only had to meet the effects of market fluctuations, which are as certain to come to all trade and manufacture as the ebb and flow of ocean tides.

The general business revival, in which manufacturing has so prominent a place, has affected all localities in Berkshire County which are not completely given over to city summer homes and to the entertaining of summer guests, and there is no locality in the United States which is growing in popularity to such an extent in this particular as this; the fine hotels, the Berkshire Inn at Great Barrington, the Elm at Sheffield, the Red Lion at Stockbridge, the Curtis at Lenox, the Maplewood at Pittsfield, the Wilson at North Adams, the Greylock at Williamstown, and the Idlewild at South Williamstown proving insufficient, with their nests of cottages and farmhouse resorts, failing again this year to provide for all of those desiring to spend a summer or autumn vacation among the famous Berkshire Hills, which have within the past few years outrivalled the popular Catskills.

The revival of the pioneer Everett Woolen Mills at Great Barrington, and a prospect of the starting up of the Owen Paper Mill at Housatonic, the cosy Hulburt Paper Mill at South Lee, and the continued prosperity of the East Lee paper mills, have breathed new life into the southern Berkshire manufacturing situation during the past six months. In central Berkshire the uninterrupted output of stock in the great paper mill town of Dalton, the steady progress of manufacture at the great woolen plant of Hinsdale Brothers at Hinsdale, the prosperity of the old Pontoosuc, Taconic, Bel Air, Russell and Tillotson woolen mills, the Peck Cotton Mill, and the Cheshire and Robbins shoe factories in Pittsfield, have infused fresh vigor into its commercial, business and citizenship population.

The geographical location of Pittsfield, on a high sloping mountain plain, its chain of six beautiful spring-fed lakes, its grand amphitheatre of densely wooded mountains, its grand levels, rolling land, sightly knolls and beautiful drives and walks adapt it particularly for a home city. For the most part its manufacture is along the line of the upper Housatonic River branches, and remote, as it were, from its business centre and fine residence localities. It is pre-eminently the beautiful home city among these hills, and is only four hours distant from Boston, New York and Brooklyn, and an hour and a half from Albany and Springfield by train. It is an inland city of great wealth, and while much of this, although retired on incomes, remains here from year to year, the Valentines and Cuttings, of New York; the Bishops, Laflins, Walkers, of Chicago, &c., linger in their palatial residences here until the late December snows fly fast and drift high.

Only a very small portion of the wealth of Pittsfield is embarked in manufacture, and consequently its trade is principally supported by the immediate living wants of its wealthy and city residents, although its income from present industries and suburban customers is quite considerable. Last year there was a boom in building business blocks, but this season the tide of building is in residences, and hosts of these are being constructed in all portions of the city. The notable business structure erected this year is the huge six story granite and brick Berkshire County Savings Bank Block, on the corner of North and East streets, adjoining the historic First Church, where fighting Parson Allen used to preach, and where he raised a company of minute men and led them up to fight the Hessians, Tories and Indians at the battle of Bennington. This also overlooks the park, where once stood the wonderful Pittsfield elm tree, shooting up 100 feet into the air, and every inch of which is famous historic ground. While the savings bank will occupy a portion of this building on the ground floor, it will also accommodate the new Berkshire Loan and Trust Company for its banking house.

Pittsfield has 2½ miles of finely equipped electric street railway connecting its Union Railway Depot (at which steam trains centre from all points of the compass) with Lake Pontoosuc, the fresh water resort of not only Berkshire County but New York towns bordering on the west. The agitation for the past two years for extending a branch of the "electric" railway to Dalton culminated last month in permission to build this road to the Dalton line, and the work is now in progress. The track leaves the main line in the northern portion of Pittsfield and is to be built over Crane avenue, up past the Government paper mill to the foot of Craneville street and almost opposite the elegant mansion and grounds of Hon. Zenas Crane. The possibility is that by the coming spring the citizens of Dalton will vote a right of way to the "electric" up through Craneville, through the beautiful Dalton main street to the Byron Weston paper mill village. In fact this road has become a necessity to both Pittsfield and Dalton for quick and convenient transit, which the peculiar high hillside tracks of the Boston and Albany Railroad—a full quarter of a mile distant from the Dalton main street at its nearest point—have never given that growing and thriving paper mill centre. The completion of this route will open up to residence settlement a handsome 6 mile tract of country, and the result is bound to be a continuous home population from North street, Pittsfield, to Westonville, Dalton.

There has been some opposition to the extension of this "electric," both by prominent citizens of Pittsfield as well as Dalton. The fact of it is it interferes with the comfort and safety of those who have long felt good over this charming carriage drive between the two localities, away from the steam cars and all discordant noises and the possibilities of accident resulting from such causes. The old highway between the two localities not only crossed tracks at grade, and over and under grade, but paralleled the Boston and Albany Railroad tracks for quite a distance. This was a great danger and discomfort to carriage driving between the two places, and was completely wiped out a dozen years ago by the building of Crane avenue.

The late Hon. Marshall Crane, of Dalton, was the leading spirit who brought about the construction of Crane avenue, and who was in constant fear of accident to both Dalton and Pittsfield people on the old highway. Those who have enjoyed the Crane avenue drive since its completion have always felt deeply grateful to Mr. Crane for his great efforts to secure this route. The magnificent stock farm of Wm. Russell Allen, of Pittsfield and St. Louis, and the home of the great trotting stallion Kremlin, is on Crane avenue, as is also the great Jersey herd farm of Mrs. Thomas Allen, and for several miles the beautiful avenue overlooks one of the most romantic valley, river and mountain views in a county of a multitude of delightful scenery surprises. Therefore it is no wonder that there has been and is now some opposition to yielding this favorite avenue to the demands of quick transit for the majority of the public; but it has got to come with the advent of that means of locomotion which is fast knocking seclusion, isolation and distance in the head, following close on the heels of the telegraph and telephone; therefore it is safe to predict that the shire city of Berkshire and its greatest paper manufacturing town will be joined together in electrical bonds of travel before the roses of another summer are in full bloom.

W. H. P.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., September 5, 1895.

This has been a broken week, as Labor Day was observed pretty generally among the mills, and the help were given a holiday. The men returned to work at night, and everything was running again by midnight as usual.

So far as business is concerned not much can be said. Fine writing and book mills could take care of a much larger volume of business than is coming to them at present. Although early autumn is upon us, there has been very little change in trade manifested as yet. It may be a little early to look for it.

The stock market is decidedly dull. There is very little demand for foreign rags and domestics are very little in demand. It must be a very tempting lot of samples to induce local manufacturers to invest to any extent. Prices have not changed materially and the demand is not likely to increase much at present.

The Holyoke Water Power Company has been obliged to place restrictions governing the use of surplus water on some of the mills several times of late, as the water has been quite low. There is plenty of water to-day, however, and the mills are using all that they want, but we need rain badly and unless we get it soon there will be trouble.

The workmen on the new dam don't seem to make much headway from day to day. The delay this week has been caused by the amount of water going over the crest of the dam. The New York, New Haven and Hartford Railroad Company is laying several hundred feet of spur track, on which the stone will be transferred to the vicinity of the big cable hoist. Arrangements have been made with the railroad company whereby the entire output of the Deep River quarries, in Connecticut, will be transported to Holyoke and delivered to the con-

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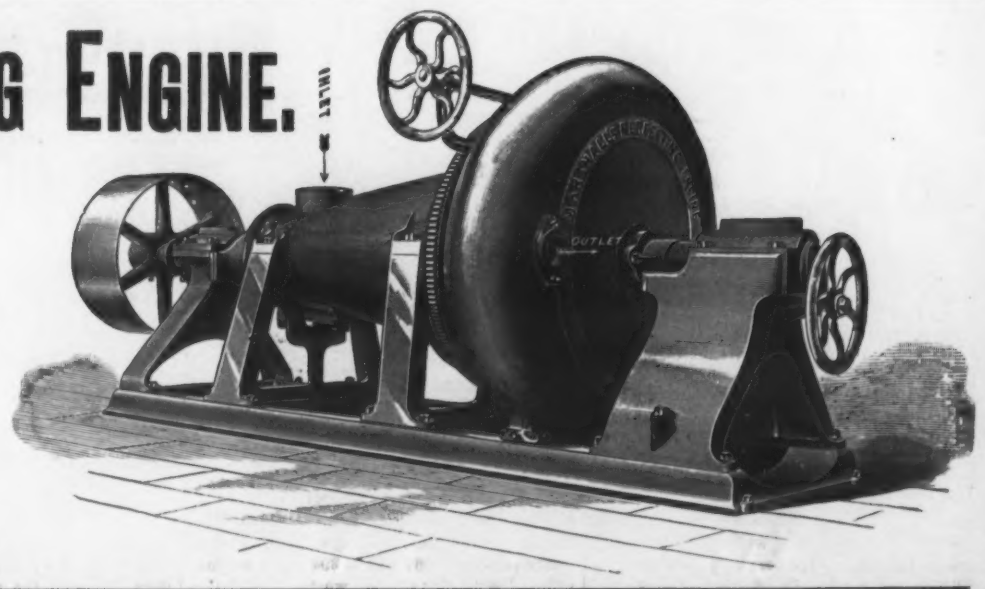

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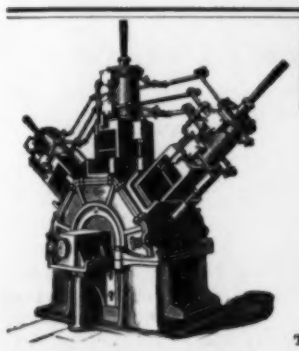

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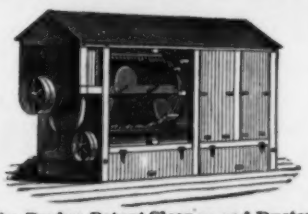

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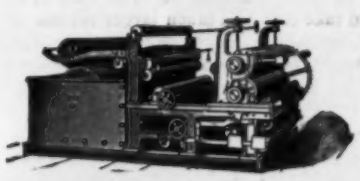

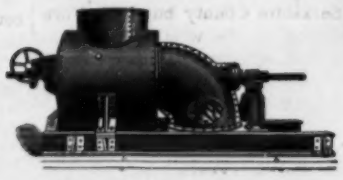

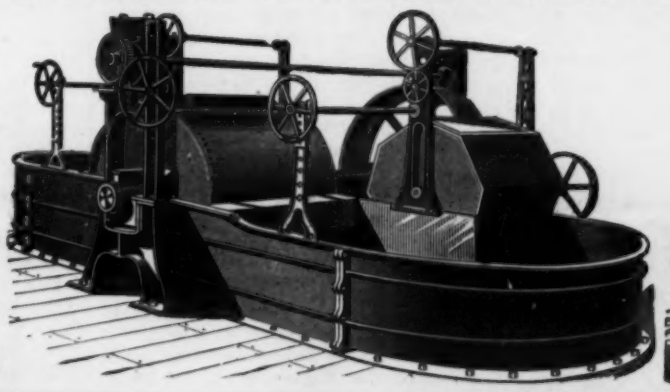

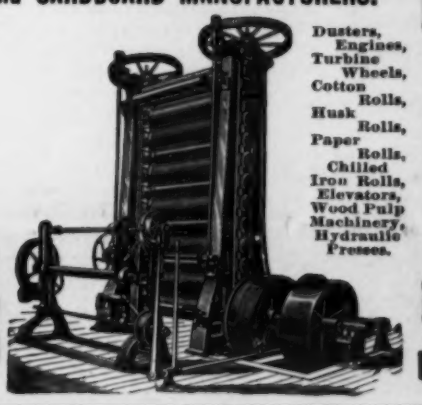

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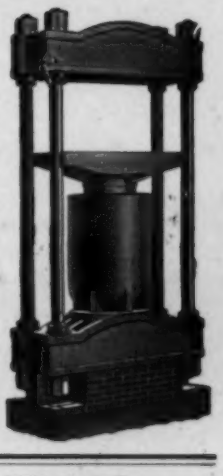

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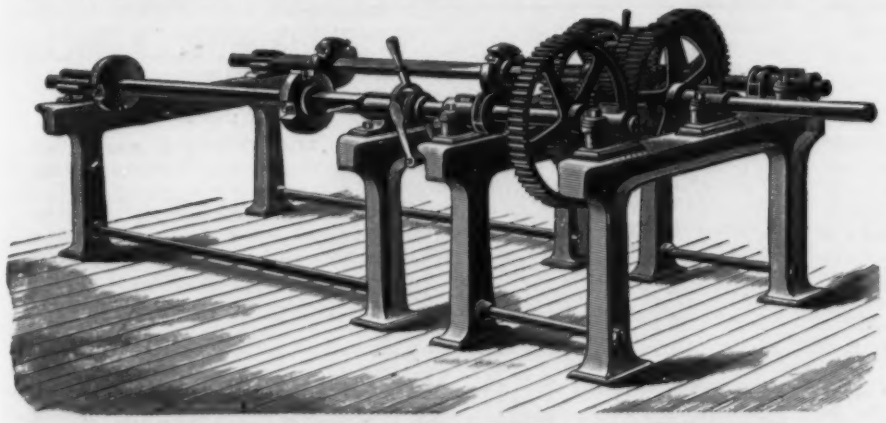

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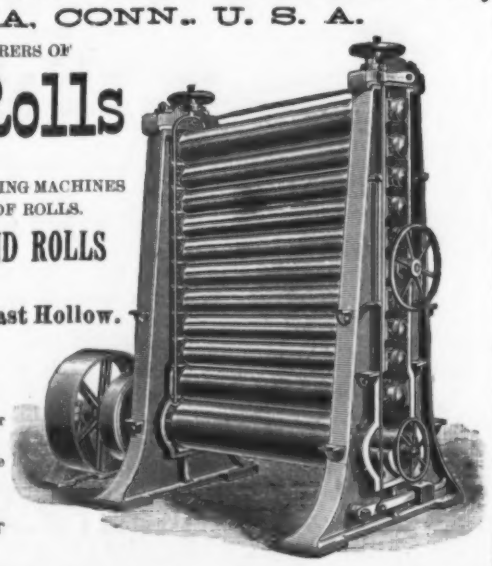

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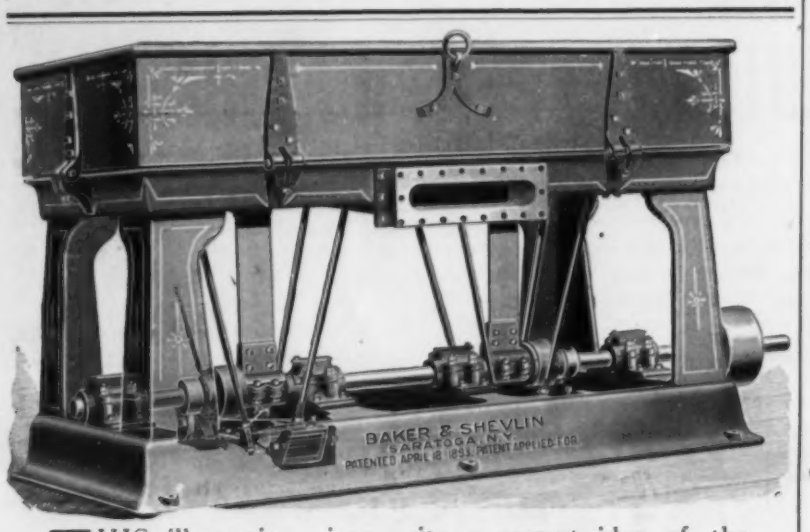

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CONTENTS.

INTRODUCTION.

General Laws of Chemistry; Principles of Chemical Physics; Chemical Arithmetic.

PART I.

General Chemistry.—With a short account of each element and its principal compounds; source, manufacture and properties of such compounds as are used in paper making.

PART II.

CHAPTER I.—**Cellulose.** Its chemical and physical properties, chemical relations and reactions.

CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres; growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Resin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

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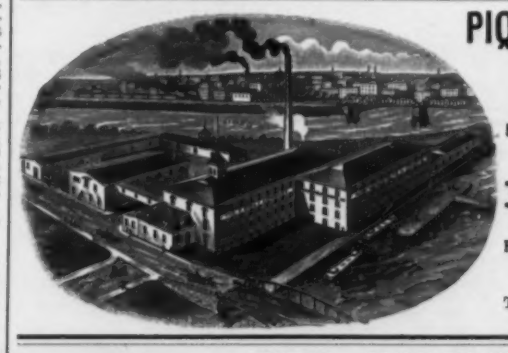

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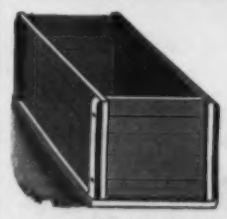

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tractors. The remainder of the stone will come from the quarry at Becket, in the Berkshire hills.

The first section of scientists who visited our city last week were so well pleased with the visit that another delegation of wise men from the Springfield convention came here this week and looked us over. The party was taken in charge by President Wells, Treasurer Waters and Engineers Sickman and Ranlet, of the Water Power Company, and were afforded a view of the work now in progress on the new dam. On leaving the dam a visit was paid to the testing flume, where the mill water wheels are all tested before being accepted. Some of the paper mills were afterward inspected, and the city water works also received some attention. Before leaving the city the party was taken on the electrics to Mountain Park, where the visitors saw some of the most beautiful scenery in this country.

Edward A. Hill, editor of the *New England Homestead*, at Springfield, died suddenly of heart disease in that city on Sunday. Mr. Hill was one of the best known newspaper men in Western Massachusetts, having for the past twenty years been connected with Springfield papers. His heroism on the occasion of the *Union* office fire a few years ago will never be forgotten, when he saved many lives and received a nervous shock from which he never fully recovered.

Mr. Hill was born at Shrewsbury, Mass., and early went to Springfield, where he was connected with the *Union*, finally becoming its managing editor. He afterward joined the editorial staff of the *Republican*, remaining on that paper five years, when he became managing editor of the *Homestead*.

"Ned" Hill had many friends, and these were not confined to newspaper circles. He had a nervous temperament, was quick to grasp news of interest and to present it in a taking way. The funeral was yesterday afternoon and was largely attended by friends and associates.

Something of a sensation occurred in a local printing house on Tuesday morning of this week. Monday was Labor Day and orders had been issued from the office for the hands to report for duty as usual, but a number disregarded the orders and spent the day as they saw fit. When they reported for duty on Tuesday morning the treasurer informed the delinquents that there was no work for them and that they could have a two weeks' vacation to recuperate in.

The annual regatta of the Holyoke Canoe Club occurred near the club house at Sans Souci on Monday, and was enjoyed by many people.

E. C. Taft and family have returned from Swampscott and are now at their home, "Kenilworth Castle." H.

GREAT BRITAIN.

[FROM OUR REGULAR CORRESPONDENT.]

LONDON OFFICE PAPER TRADE JOURNAL, 1 MITRE COURT, FLEET ST., E. C., LONDON, England, August 27, 1895.

Some time ago I told you of the enormous machine that the Clyde Paper Company (Limited) had determined to put in. The contract went to Bertrams (Limited), and the order for the wires to James Brodie & Co., Great Eastern Wire Works, Glasgow. Of course to weave wires 45 feet in length and 160 inches wide a new loom was needed, and I understand that this is now complete and that the weaving of the monster wire has begun. Messrs. Brodie evidently think that larger machines will follow, for while they were about it they constructed a loom 180 inches broad and 85 feet long.

A fire occurred at Bury the other day which throws a little light on the vicissitudes through which an industrial establishment may pass. The Manorial Mill, I believe, started life as a cotton factory; then the spindles were taken out and replaced by a paper machine. After a short and turbulent period in the paper industry the mill went back once more into the cotton trade, but this time as a yarn twining works. This, I thought, was its last trade; but, as I premised, a fire occurred, and lo! the Manorial Mill is now recorded as a wholesale confectionery works.

According to a Manchester paper some paper mills in that district are manufacturing their refuse fibre into celluloid. The supply of material is collected from water used in washing. By the addition of chemicals these fibres are precipitated and form a filmy mass, which is strained, allowed to settle, and is then pressed into a solid body. After being put through some very simple processes it can be cut in slices and arranged in any required form. This is a valuable discovery, as it utilizes that which heretofore has gone to waste. The preparation differs from ordinary celluloid in that it is positively non-inflammable, and has sufficient rigidity to make it available for stereotyping and similar purposes.

The Frenchman is never so happy as when he is getting statistics together, which is curious, for of all nations on earth our lively neighbors are the least given to scrupulous care and exactness of statement. Possibly, therefore, some interesting information with regard to the world's annual production of paper which is going the round of the French press must be taken with a large grain of salt. The gross amount manufactured is put down at 70,904,000,000 quires. The book publishers, according to this writer, absorb half of this total, while the newspapers consume about 600,000,000. England is at the head of the list so far as paper consuming is concerned. We dispose, on an average, of 11½ quires per head of the population. America comes next with 10¼, then Germany, and then France.

We are on the eve of a grand trades union congress. It will be held at Cardiff from the 2d to the 7th of September. All the trades will be represented, and the programme of demands is extremely fine and large; in fact if the trades unions get everything they want it will amount to little short of a revolution. The paper mill workers call for an amendment of the Merchandise Marks Act to insure that every sheet of foreign paper imported shall have a watermark, showing the country in which it is made, and every roll of foreign paper shall have a similar watermark on at least every square yard. They also ask that in Government contracts the sole use of British paper shall be compulsory, where such paper can be obtained. The other resolutions deal with a remodelling of our present system of state education, the national federation of all trades and industries, a general eight hours' day, the marking of British as well as foreign goods, the prevention of "blacklegging" among trades unionists, the boycott of newspapers, &c., not produced by trade union labor, the abolition of overtime for women, the abolition of capital punishment, fair wages for all persons employed in Government workshops, taxation of ground values, and the placing of the responsibility of finding work for the bona fide unemployed on the Local Government Board, the expense being chargeable to the whole district.

Alexander Annandale, of Bielside, near Dunbar, died very suddenly about a fortnight ago. Until ten years ago he owned and worked the Beltonford Paper Works, at Westbarns. He then retired from business, although he devoted himself very largely to public affairs. The Beltonford Paper Works, by-the-bye, were completely burnt down about three years ago.

Richard Teape, of Wiggins, Teape & Co., paper makers and wholesale stationers, who died on June 25 last, has left a personalty of the net value of $450,000. Mr. Teape, who I believe was a bachelor, leaves this mainly to his sisters and to his nephews.

Murgatroyds' Ammonia, Soda and Salt Syndicate, Limited, has been swallowed up by the Brunner-Mond concern.

Clayton Beadle, whose name is well known to everybody connected with the paper trade, seems to have broken out in a fresh place. He has invented a most ingenious and at the same time simple little machine for marking paper and linen indelibly. The instrument is nothing more nor less than a silver stamp through which a current of electricity can be passed. The linen or paper is moistened with salt water and the stamp is pressed upon it. The electrical current is then sent through, and prints the linen with a salt of silver. The current being reversed the silver is reduced from its salt, and forms permanent characters in the cloth.

A patent, by Robert Brown, of Penicuik, has excited a good deal of comment here among the paper makers, who seem to think that the methods proposed solve some old problems. The object of the patent is, first, to make both sides of the paper alike; second, to increase the bulk of the paper in proportion to its weight; third, to reduce the liability of the sheets sticking to the press rolls; fourth, to gain in rapidity and economy. In the ordinary process the pulpy web of paper after the water has been pressed out of it passes with the felt blanket through two pairs of pressing rolls. One surface only of the web, therefore, has contact with the press roll, and to bring the other side into contact with the roll the web is transferred to another blanket in a position reversed to that of the first one.

When the web is thus reversed, its smooth side—lately in contact with the press roll—is laid upon the felt, and as the felt and paper pass between the second pair of press rolls the rougher side of the paper is brought into contact with the press roll. This method of reversing the web of paper between the first pair of press rolls and the second pair is for the purpose of equalizing the two surfaces of the paper, and removing the roughness imparted by the felt and wire beds upon which the pulp is first formed into the sheet. That surface of the pulp which is in contact with the felt and wire bed is always the roughest, and cannot be made equal in smoothness to the other side by this process.

In Mr. Brown's invention the web of paper pulp is turned upside down upon the felt before it passes between the first pair of press rolls, so that its roughest side has contact first with the press roll instead of its smoothest side. As both sets of press rolls are brought to bear upon the roughest surface of the paper, and the first pair of them while the sheet is in its softest and most sensitive condition, the result obtained is the complete removal of the rough surface. The two surfaces of the paper are therefore made equally smooth. By the method first described the paper is partially dried and hardened before it is turned upside down upon the felt, and considerable pressure is required when passing it between the second pair of press rolls in order to modify the roughness of the surface derived from the felt and wire beds. The great pressure thus exerted by the second pair of press rolls reduces the bulk or thickness of the paper sheet. Much less pressure is required to remove the roughness when the rough surface is brought into contact during its pulpy state with the first press roll of the first pair, and very little pressure comparatively is required afterward when it is passed between the second pair of press rolls. The couch roll is also worked without pressure.

As a result of this reduction of pressure the sheet of paper is made thicker when finished than one of similar weight made by the old process. When the paper web is in its pulpy state it is a common thing for it to stick to the first press roll. When the sheet thus sticks there is both waste of time, labor and material before the machine is got into proper working order again, and by pressing the rough side of the pulp first, instead of the smooth one, this liability of the pulp to stick is greatly reduced. The quantity of paper which can be made per day by this method is greater than under the former method, and the waste of manual labor, pulp and motive power is less, while an improved quality of paper is obtained. The paper has both sides alike instead of having a rough side and a smooth one, or one fine and one coarse side. The paper is also thicker to the touch and more bulky in appearance because of the reduced pressure necessary.

John White, of James Bertram & Son, Edinburgh, patents an improvement in the construction of drying cylinders in paper making machines. It is advantageously applicable in the construction of any cylinders subjected to great changes of temperature or to other actions tending to render their joints defective. A drying cylinder is commonly made with a cylindrical cast iron shell closed by end disks having hollow trunnions through which steam is introduced to heat the cylinder, and this invention has more particularly to do with the joints between the cylindrical shell and the end disks. The shell is cast with an inward flange at each end, and at a short distance inward from the end. At the outer face of the flange and at its inner edge a projecting rib is formed, and is made to fit accurately the inside of an inward flange formed on the end disk. The outside of the flange on the end disk is conical and a counterpart conical recess is formed in the inside of the part of the cylindrical shell extending beyond the flange of the shell. The conical recess of the shell is at its outer edge, which is smallest in diameter, just large enough to admit the larger inner edge of the conical flange of the end disk, and when the end disk is in position there is an annular conical space between the two surfaces. The conical surfaces are made so that the annular space between them is slightly wider at its inner part. A suitable material, preferably metallic, is forced into the annular conical space, with or without segmental keys, and the material is caulked or driven in to fill the inner part of the space, and to assume a dovetail form fitting the inner slightly wider part of the space. In this manner a secure and tight joint is formed, capable of withstanding considerable pressure and not liable to be rendered leaky by the action of steam or of impurities, such as often accompany the steam, especially when exhaust steam from an engine is used. When the cylindrical shell is cast with annular ends the trunnions, with flanges or small disks formed on them, may be jointed to the annular ends in a similar way, and manhole doors may also be similarly secured. In some cases a steel or wrought iron ring may be shrunk on in a groove formed for it round the extreme edge of the cylindrical shell, or round a neck flange formed on an annular end disk.

That trade has improved a little, or that at least there is a healthier feeling in the market, is evidenced by the fact that nearly all paper mill shares are firm, or even in some cases a little higher. I hear from good authority that a gigantic manufacturing concern in the North is considering the advisability of adding a paper mill to its spinning and manufacturing works. The firm in question bundles an enormous amount of yarn, and could use the greater part of its own production of browns.

ALFA.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., September 3, 1895.

The present situation of the paper manufacturers on this river is just about the same that it has been for several weeks past, the only thing new being the additional progress which has been made in getting new steam engines ready to go into operation. No more water is being used than before, and manufacturers quite generally seem to have come to the conclusion that none of the steps talked of for getting the Government to allow the use of a portion of the water will be effective, and that consequently no water will be available for power until the level of the lake rises to the point insisted upon by the Government—the crest of the Menasha dam.

In my last letter it was stated that Governor Upham had written to the War Department asking that some relief might be accorded. Up to the present time, however, there has been no result from this letter, which has evidently been referred to the engineers and has doubtless by them been pigeon-holed. This action of the Governor aroused a commotion in Oshkosh, which is virtually responsible for all of the present low water imbroglio, and measures were taken there to undo any effect that it might have at headquarters.

The plan originated in Green Bay of holding a meeting of the Governor, members of the Congressional delegation from this State, and the manufacturers, to see about taking steps toward some new legislation in the premises, when the time came, and that meeting was set for to-day. It was felt by some of the manufacturers that Green Bay was not the logical place for holding such a meeting, as it has no water power, and it has been suspected that the meeting was called there more in the interests of other things that the Green Bay people would like to bring before the attention of the Governor and Congressmen than water of power. Taking it by and large, therefore, the belief seems to prevail that there will be no relief until Nature comes to the rescue with enough rain to bring the water up to the Government standard.

As a result of the gathering Colonel Frambach introduced a resolution that the chairman of the meeting appoint a committee, to consist of two members from each city of the Fox River Valley from Oshkosh to Green Bay, to draw up resolutions regarding the water power situation in the valley, and propose remedies for the same, and report the same when finished to the Green Bay Business Men's Association, and that said association then transmit the resolutions to the Senators and Representatives in Congress. The personnel of the committee has not yet been announced.

The mill of the Atlas Paper Company in this city, which has been closed ever since the low water trouble began, will be started within a few days. The steam engine installation is just about finished, but some additional work is being done in the way of attaching a mechanical stoker to the boilers, which will take a little more time. At the mills of the Kimberly & Clark Company the engine will be ready to run in about a week more. Mechanical stokers are also being put on the boilers at this plant.

At the mill of the Shattuck & Babcock Company, at De Pere, the building of the walls of the boiler house will be completed next week, when the work of setting the boilers will begin. The foundation for the engine is now being constructed, and is of the most massive character, over 500 tons of stone being used in it. The engine will not be in place for several weeks. It will have a nominal power of 1,000 horse power, but will give 1,400 horse power at demand.

The Fox River Paper Company, of Appleton, broke ground last week for its new boiler and engine house, which has been described in these columns. The Fox River people are just completing the improvement of changing the width of the machine in the Lincoln Mill from 74 inches to 84 inches. The change has been made by the Beloit Iron Works. When the job was undertaken it was found that the floors and supporting timbers were badly rotted, and they have been entirely renewed. The company at present is figuring upon putting in new feed water heaters for the boilers in the Fox River and Lincoln Mills. It is also looking into the problem of the heating of its mills in winter. This has previously been done by the Sturtevant system, but the company is quite favorably disposed toward the plan which has been tried by other mills in this valley, of heating by hot air from the breeching of the steam boilers, and will probably adopt this method. It will put in a purifier in connection with the new feed water heaters.

The Thilmany Paper and Pulp Mills today received their new tissue paper machine from the Beloit Iron Works, and it is now being got into the mill preparatory to being set up. The new building made for its accommodation is completed, and the machine can be installed at once. This company also recently received the new water tube steam boiler which was ordered some time ago, as stated in these columns at the time. The boiler was fired up for the first time yesterday.

The Western Paper Bag Company, of Kaukauna, is at present figuring upon putting in a new paper machine. It is understood that the Black & Clawson people are getting out the plans for it. Details regarding it are not now at hand. It is possible that a wet end at the Batavia mill may be utilized in the new machine.

Although the detailed plans of the new mill of the Quinnesec Falls Company are not yet quite ready to be described, your correspondent was shown enough about them to gain an idea of the tremendous institution which is in progress. The head of water will be from 70 to 80 feet, and it will be brought down to the mill in an iron penstock made of half-inch boiler iron thoroughly braced. For the first 243 feet of its length this pipe will be 16 feet in diameter, and for the other 213 feet it will be 7 feet in diameter. The plans for the pulp mill show fifteen pulp grinders, each of which will have 310 horse power attached to it. There will be four paper machines in the paper mill. These rough estimates will give an idea of the size of the institution. Architect C. B. Pride expects to have all of the plans ready very shortly, when more details will be available. At present 150 men are working at the plant and the force is to be further increased to-morrow. Accommodations for the men were scarce at first, and the force has been increased as fast as the men could be housed. Thirty feet in depth of solid rock will have to be excavated over a good portion of the space upon which the paper mill is to stand.

The Gilbert Paper Company, of Menasha, has just got its new stack of supercalenders in operation, giving it four stacks of calenders in the mill.

To-morrow evening will be celebrated the marriage of C. A. Babcock, of Neenah, to Myra Davis, the event taking place at Neenah amid great festivities. In this city, on the same evening, John Van Alstyne is to be married, the bride being Ella Pierce, of Appleton.

F. A. Gale, representing the Erie City Iron Works, has been in the valley for several days past, and departed this morning on his return to his home in Chicago.

L. M. Friedlander, of Chicago, has been calling upon the trade in this valley of late.

T. W. Orbison has just returned from a business trip to Chicago in the interest of the firm of O'Keefe & Orbison.

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Transmission of Water Through Submerged Tubes.

By John H. Cooper.

I propose in brief to offer herein some of the less known results of experiments upon the flow of water through tubes into water. Several years ago when I came to the designing of the centrifugal pumps for the drainage of the United States dock at Mare Island Navy Yard, Benicia, Cal., I wanted to know what shape should be given to the terminals of the suction and discharge pipes and what power allowance should be made for the hydraulic resistance incident to receiving and discharging the water, since both of these actions must be performed during submergence of all the pipes.

The form of the "contracted vein," the general rounding of corners, and large radius bends for waterways were known, noted and applied, but to what order of curves the ways should conform, how far they should extend beyond entrance to the water, and what resistance would be offered to the flow of water into and out of a system of submerged pipes—these facts of important things were not at hand and had to be sought for.

A glance at the usual hydraulic literature showed clearly that published data upon the discharge of water into the atmosphere is abundant, but the records of discharges into liquid masses and beneath their surfaces are very rare.

A reproduction of some of these data may be helpful to intending designers and experimenters, and may prove advantageous when the leading facts are collated and grouped for ready use and placed further afield.

As a matter of history and for whatever value may be attached to the reference, we are told that the ancient Romans knew that the flow of liquids through an orifice could be increased by the use of a diverging tube, and that Venturi in 1791, Bernoulli, Eytelwein and others in earlier and later times, gave us the most experimental knowledge we have of the flow of water through tubes of diversified forms and circumstances of use. These, I imagine, were mostly upon the conditions of liquid flow into the atmosphere, but we want to know here all about the facts of the case when a current of water is drawn from and caused to penetrate a mass of still or moving water.

In answer to this query, but long after my need, I found the following records: James P. Espy, in the journal of the Franklin Institute for 1828, says: "I have lately ascertained by some experiments in hydraulics that as much water runs out in a given time through a hole in the side of a vessel containing water under a given head when the egress is made below the surface of the water, as when made in the open air. If, then, water, which is nearly 800 times denser than the atmosphere, makes no more resistance to the efflux of water than the air does, may we not reasonably infer that, in very short tubes at least, the atmosphere makes no sensible resistance to the egress of a current of air?"

R. W. Fox's letter in the *Philosophical Magazine*, 1830 (English), says: "I am not aware that it has been before noticed that a jet of water discharges the same quantity in water as in air in a given time, without reference to the depth or the motion of the water, at least within certain limits. Thus, when the experiment was tried with a head of water 6 feet high, the same orifice discharged equal quantities in equal times, in air, in still water and in a rapid stream, moving at the rate of about 6 feet in a second. The jet having in one case been turned with the current, and in another against it, and when by lengthening the tube the aperture was submerged to the depth of 15 feet, the effect was the same as at the surface, under the pressure of an equal column above it. We sometimes colored the water, when the jet appeared to pass unbroken to a considerable distance under the water."

Subsequently Mr. Fox presented another communication on this subject, in which he says: "Where a jet of water is discharged under mercury the results are the same, under a given force, as when it takes place in water or air, the quantity discharged being in all cases the same in the same time.

"Hence it appears that the force with which a moving or spouting fluid recoils is not affected by the surrounding medium, however rare or dense it may be; and thus we may understand why the attempts which have been made to propel vessels by forcing water through them against water have not proved advantageous.

"The well-known fact that large rivers penetrate in a direct course far into the ocean, notwithstanding its agitation by tides and currents, is somewhat analogous. In illustration of this natural phenomenon a story is told of the crew of a disabled vessel, who being without water for days fortunately came within hailing distance of a passing ship. On begging for water to drink they were told to cast their buckets a-sea and dip it up. Crazed by thirst, they obeyed, though unbelieving. To their amazement and delight the water secured was fresh and drinkable, as if a miracle had been wrought in their behalf. Although out of sight of land they happened to be in the outflowing current of the river Orinoco, which at this point was penetrating the waters of the ocean and which as yet was unmixed with it."

Another illustration more to the point is that of the unimpeded running of turbine water wheels when submerged, which was observed early in experiments with these motors, and indeed this fact has been prominently noted as one of a dozen or more advantages of this type of hydraulic motor in comparison with overshot, breast wheels and the like.

When we come to the conclusions drawn from tests, giving the measurements of effects, we find that there is a difference of opinion among authorities as to the loss attending submerged discharge. Weisbach has said it was 1⅓ per cent. less; Francis, 3 to 5 per cent. less; Steckel, 4½ to 5 per cent. less, and Ellis, 1 per cent. higher. Some say there is no difference, while the experiments of others show for comparison the figures of 0.952 for discharge into air and 0.945 for submerged discharge.

Hamilton Smith says: "We can generalize with reasonable safety thus: The coefficient for submerged orifices will be always less than for the same orifices with free discharge, the height being in both cases the same, but with great heads this difference will become inappreciable."

In any case, whether discharging into air or water, it is a well established fact that flowing water will not turn sharp corners without loss of quantity discharged, and therefore the edges of the nozzle must be conical or rounded, or both. A simple half circle rounding of the edge of an aperture of, say, 2½ inches radius to a 6 inch width of opening, has been found by experiment to give a discharge up to within 5 per cent. of that which is theoretically possible. (See *proc. Inst. M. E.*, London, 1866).

And if to rounded edges the standard conical ajutage be judiciously added, Eytelwein says, a coefficient of discharge of 0.98 may be obtained.

This nozzle was rectangular, 6 inches high, 48 inches wide, and the best velocity results were 7.80 feet per second, when under 24 inches to 30 inches head, as compared with the theoretical limit of 8.04.

James B. Francis in his "Lowell Hydraulic Experiments," in 1855, said he had not met with any experiments on diverging conical tubes discharging under water, although there was good reason to believe that tubes of greater length and divergency would operate more effectually under water than when discharging freely in the air. His conjectures were realized and his experiments yielded extraordinary results.

Venturi's diverging tube, discharging freely into air, gave the ratio	1 : 2.21
Francis' submerged tube	1 : 2.56
The maximum discharge through a thin plate is	0.5928
Through Francis' tube	2.4306

giving a ratio of 1 : 4.12.

I will conclude by stating that one of the useful applications of the knowledge of the increased flow through diverging tubes is that of the "diffuser," devised by Mr. Boyden and applied to his turbines at Lowell, Mass., by which a gain of 3 per cent. was realized.

This improvement brought him $400 for every 1 per cent. over the 78 per cent. of efficiency guaranteed for the wheel.

In the construction of our centrifugal pumps, noted above, I embodied the most advanced hydraulic principles, as displayed in part in this essay, such that, while 80,000 gallons per minute was asked for in the guaranty, the actual results as shown in the official report were a mean discharge of 112,922 gallons per minute, both pumps running together, and the greatest discharge of 137,797 in the same time, the dock being emptied from a level of 26 feet above the floor in fifty-five minutes.—*Power and Transmission.*

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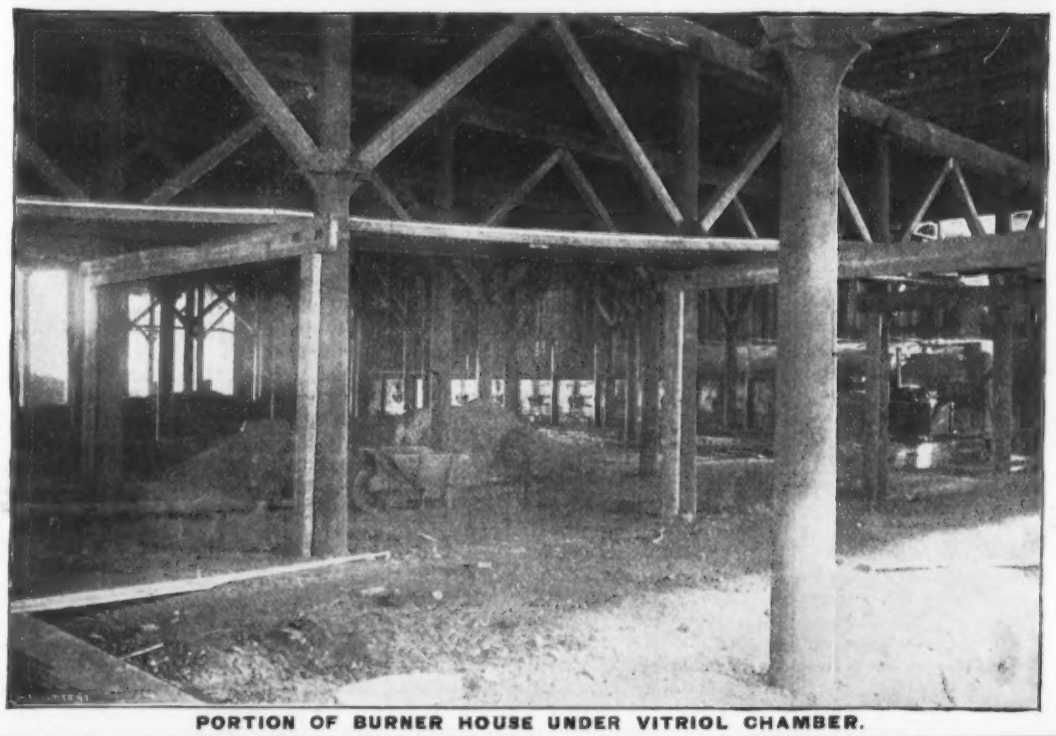

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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED AUGUST 30, 1895.

An. Colors..	790	$52,192	Paper.....	674	$26,284
Alum.....	—	—	Steel Pens..	—	—
Alum's Cake	—	—	Stationery.	5	712
Bl. Powders	791	13,719	SlatePencils	126	772
Soda Ash...	3,606	13,396	Clay.....	—	1,900
Soda, Caus.	894	10,582	J'te B'ts,&c.	—	—
Soda, Sal....	292	395	P.Hangings	2	56
Soda, Hypo.	—	—	Pap'r Stock	2,544	35,382
Ultramarine	41	1,901	Terra Alba	300	1,000
Books.....	383	36,038	Waste.....	418	20,376
Newspapers	162	8,684	Wood Pulp	1,505	10,174
Engravings.	87	13,271			
Ink.....	344	3,164			
Lead Pencils	8	2,447	Totals...	12,972	251,745

Imports General Merchandise for the week ended August 30, 1895..... $6,415,811

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO SEPTEMBER 4, 1895.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	685	....	....	....	....
Antwerp.....	3,093	5	1,153	....	13,039
Bordeaux.....	1,029	....	....	....	850
Bremen.....	2,641	725	49	....	2,867
Bristol.....	....	...	....	....	2,657
Buenos Ayres.	530	....	....	....	....
Calcutta.....	....	...	....	....	6,534
Cen. America.	180	....	....	....	....
Christiania....	....	....	85	....	....
Copenhagen..	...	....	125	....	1,581
Dundee.....	....	....	1	....	756
Fiume.....	....	....	34	....	....
Geestemunde.	412	....	....	....	537
Genoa.....	808	....	....	....	3,568
Ghent.....	90	40	....	....	366
Glasgow.....	146	53	....	....	78
Hamburg.....	5,394	305	1,677	....	3,170
Havre.....	....	....	....	....	1,063
Hiogo..... ...	6,544	....	....	....	....
Hull.....	5,550	40	2,081	....	8,122
Kobe.....	11,578	....	....	....	....
Leghorn.....	1,858	....	....	....	185
Liverpool.....	698	197	....	....	13,835
London.....	4,005	1,575	....	....	7,884
Marseilles....	155	....	30	....	2,197
Newcastle....	....	221	....	....	2,454
Rosario.....	....	....	....	....	98
Rotterdam....	2,458	....	67	....	3,637
Stettin.....	1,095	....	196	....	1,442
Trieste.....	123	....	45	....	....

IMPORTS of Rags and other Paper Stock at the Port of New York for the month ended August 31, 1895, from the following named Ports, showing Quantities from each Port.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales	Bales	Tons	Tons	Bales
Antwerp	117	—	184	—	1,140
Bremen	28	—	—	—	28
Bristol	—	—	—	—	364
Calcutta.....	—	—	—	—	696
Dundee	—	—	—	—	143
Glasgow.....	6	—	—	—	—
Hamburg.....	1,712	98	200	—	1,295
Hull.....	1,312	—	70	—	1,151
Leghorn.....	427	—	—	—	—
Liverpool	68	2	—	—	2,109
London	761	109	—	—	686
Marseilles.....	—	—	—	—	600
Rotterdam.....	303	—	—	—	1,455
Stettin.....	188	—	—	—	352
Totals.....	4,920	137	454	—	10,019

Special List of Imports of Paper Stock at the Port of New York for the month ended August 31, 1895.

Importers.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales	Bales	Tons.	Tons.	Bales
Atterbury Bros.....	52	....	....	....	144
Bateman, H. O.....	....	....	90	....	....
Bertuch, F., & Co...	....	....	25	....	161
Castle & Gottheil ...	558	....	50	....	760
Coste, Paul.....	18	....	....	....	....
Darmstadt & Scott .	70	....	....	....	....
Davey, W. O., & Son	..	....	....	....	183
Donner, C. F.....	68	....	....	....	....
Downing, R. F.,& Co	331	....	....	....	....
Dutton, H., & Co....	....	....	....	....	696
Goldman, H.....	....	....	58	....	....
Hagemeyer, J. H....	35	....	....	....	....
Hamilton, G.....	....	....	71	....	....
Hatton, E., & Co....	180	....	47	....	....
Helwig, R	....	....	60	....	....
Jessup & Moore Paper Company.....	140	....	....	....	600
Lewy Brothers.....	1,345	....	....	....	97
Lyon, J. H., & Co...	250	....	....	....	69
Mack, L. C.....	65	....	....	....	....
Mason, J. W., & Co..	....	....	....	....	1,914
Millar, G. W., & Co.	....	....	....	....	48
Oelrichs & Co.....	....	....	....	....	98
Overton, R H., & Son	110	....	....	....	....
Perry, Ryer & Co...	....	....	....	....	95
Pirnie, James.....	66	50	....	....	774
Ralli Brothers.....	..	....	....	....	696
Rose, S. J.....	....	....	....	....	44
Salomon, F., & Co..	900	26	....	....	779
Schultz & Ruckgaber.....	116	....	....	....	332
Sheldon, G. W., & Co.	....	....	55	....	....
Train, Smith & Co..	544	61	....	....	2,649
True, E. P.....	60	....	....	....	....
Vandergrift, J. B., & Co.....	96	....	....	....	....
Vander Toon, W. H.	35	....	....	....	....
Totals	4,920	137	454	...	10,019

NEW YORK IMPORTS.

FROM AUGUST 28 TO SEPTEMBER 4, 1895.

Paper Stock.

Ralli Brothers, Glencaird, Calcutta, 696 bs. manillas.

F. Salomon & Co., Phœnicia, Hamburg, 376 bs. rags.

Castle & Gottheil, by same, 26 bs. rags.

Lewy Brothers, by same, 14 bs. rags, 14 bs. bagging.

F. Salomon & Co., Helene, Hamburg, 52 bs. rags, 476 bs. bagging.

H. O. Bateman, Queen Mab, Hamburg, 50 tons chemical fibre.

H. O. Bateman, Lambert's Point, Hamburg, 40 tons chemical fibre.

Lewy Brothers, Colorado, Hull, 207 bs. rags.

Train, Smith & Co., by same, 112 bs. bagging.

J. W. Mason & Co., Georgic, Liverpool, 286 bs. manillas.

Train, Smith & Co., by same, 2 bs. papers, 225 bs. manillas.

L. C. Mack, by same, 65 bs. rags.

J. W. Mason & Co., Bovic, Liverpool, 149 bs. manillas.

John H. Lyon & Co., by same, 3 bs. rags.

Paul Coste, Paris, London, 13 bs. rags.

John H. Lyon & Co., Manitoba, London, 66 bs. rags.

Paper.

L. De Jonge & Co., Georgic, Liverpool, 13 cs.

W. Seyd, Waesland, Antwerp, 11 cs.

Kupfer Brothers, by same, 33 cs.

R. Sulzberger, by same, 20 cs.

G. W. Sheldon & Co., by same, 50 cs.

C. S. Abbott, by same, 60 cs.

Favor, Ruhl & Co., Teutonic, Liverpool, 2 cs.

Becker & Francke, by same, 8 cs.

R. F. Downing & Co., Exeter City, Bristol, 6 cs.

O. G. Hempstead & Co., Moravia, Hamburg, 36 cs.

L. De Jonge & Co., by same, 25 cs. and 27 bs.

R. F. Downing & Co., by same, 1 cs.

F. J. Emmerich & Co., Phœnicia, Hamburg, 1 cs.

H. Sander, by same, 4 cs.

L. De Jonge & Co., by same, 5 cs.

Henry Lindenmeyr & Sons, 33 cs.

B. & O. Meyers, Umbria, Liverpool, 8 cs.

L. De Jonge & Co., Edam, Rotterdam 28 cs.

W. H. S. Lloyd & Co., St. Louis, London, 1 cs.

American Trading Company, by same, 10 cs.

Henry Lindenmeyr & Sons, Veendam, Rotterdam, 141 pkgs.

Neuss, Hesslein & Co., by same, 16 cs.

G. Gennert, by same, 6 cs.

O. Majert, by same, 2 cs. hangings.

C. S. Abbott, Friesland, Antwerp, 30 cs.

L. C. Wagner, by same, 5 cs.

A. Haug & Co., by same, 4 cs.

O. T. Melvin, by same, 5 cs.

Kupfer Brothers, by same, 5 cs.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED AUGUST 31, 1895.

Paper.

A. Hartung & Co., Assyrian, Glasgow, 18 cs.

Order, Gladestry, Hamburg, 44 cs.

Paper Stock.

Jessup & Moore Paper Company, Assyrian, Glasgow, 98 bs. waste paper.

Biddeley & Co., by same, 18 bs. rags.

Order, by same, 244 bags waste paper, 261 bs. old bagging.

Jessup & Moore Paper Company, Gladestry, Hamburg, 155 bs. jute waste, 92 bs. rags.

Bertuch & Co., by same, 120 bs. wood fibre.

Soda Ash.

United Alkali Company, Pennland, Liverpool, 334 bags.

Brown Brothers & Co., by same, 334 bags.

Order, by same, 170 cks., 194 tcs., 252 bags.

J. L. & D. S. Riker, by same, 30 cks.

Caustic Soda.

J. L. & D. S. Riker, Assyrian, Glasgow, 50 drums.

James Lee & Co., by same, 100 drums.

Soda Crystals.

Order, Pennland, Liverpool, 50 cks.

Bleaching Powder.

J. L. & D. S. Riker, Assyrian, Glasgow, 50 cks., 173 pkgs.

Order, Pennland, Liverpool, 20 cks.

Antichlor.

Order, Gladestry, Hamburg, 96 cks.

Salt Cake.

Order, Pennland, Liverpool, 605 bags.

China Clay.

Order, Assyrian, Glasgow, 50 cks.

Dunn Brothers, Pennland, Liverpool, 220 cks.

BOSTON IMPORTS.

FROM AUGUST 29 TO SEPTEMBER 4, 1895, INCLUSIVE.

Paper, &c.

W. H. Guild & Co., Cephalonia, Liverpool, 6 bs. periodicals.

W. A. Nosworthy, by same, 5 cs. paper.

H. A. Turner & Co., by same, 1 cs. paper hangings.

Dennison Manufacturing Company, Rappahannock, London, 1 cs. parchment.

Dennison Manufacturing Company, Sagamore, Liverpool, 8 cs. and 25 bs. tissue paper.

Paper Stock.

Train, Smith & Co., British Queen, London, 126 bs. rags.

Castle & Gottheil, by same, 94 bs. rags.

Horace Dutton & Co., by same, 405 bs. rags, 260 coils manillas, 823 bs. flax waste.

Train, Smith & Co., Storm King, Antwerp, 570 bs. rags, 136 bs. flax waste.

C. A. Cheney, by same, 337 bs manillas.

Horace Dutton & Co., by same, 109 bs. rags.

Order, by same, 21 bs. rags.

Train, Smith & Co., Sagamore, Liverpool, 82 bs. rugs, 39 bs. manillas, 139 bs. waste paper.

Edwin Butterworth & Co., by same, 93 bs. rags.

E. P. True, by same, 42 bs. waste paper.

Train, Smith & Co., Rappahannock, London, 249 bs. rags, 160 bs. waste paper.

Edwin Butterworth & Co., by same, 70 waste paper.

Horace Dutton & Co., by same, 45 bs. waste paper, 198 coils manillas.

S. D. Warren & Co., by same, 260 bs. rags.

E. P. True, by same, 34 bs. waste paper.

Castle & Gottheil, by same, 25 bs. rags.

Atterbury Brothers, by same, 140 bs. waste paper.

Crocker, Burbank & Co., by same, 296 bs. waste paper.

Wood Fibre.

Castle & Gottheil, Madura, Hamburg, 259 bs.

Sizing.

Train, Smith & Co., Sagamore, Liverpool, 189 bags.

Edwin Butterworth & Co., by same, 208 bags.

Warren & Co., by same, 50 bags.

Baeder, Adamson & Co., by same, 111 bags.

C. A. Cheney, Storm King, Antwerp, 113 bags.

E. W. McClintock, Cephalonia, Liverpool, 85 bags.

Bleaching Powder.

J. L. & D. S. Riker, Sagamore, Liverpool, 449 cks.

A. Klipstein & Co., Storm King, Antwerp, 36 cks.

Caustic Soda.

J. L. & D. S. Riker, Sagamore, Liverpool, 50 drums.

Edward Hill's Sons & Co, by same, 50 drums.

Soda Ash.

Warren & Co., Sagamore, Liverpool, 146 cks. and 200 bags.

A. Klipstein, by same, 20 cks. and 100 bags.

Wing & Evans, Cephalonia, Liverpool, 33 cks.

Soda Crystals.

Warren & Co., Sagamore, Liverpool, 280 bbls.

Special List of Imports of Paper Stock at the Port of Boston for the month ended August 31, 1895.

Importers.	*Rags.*	*W. Papers.*	*Manillas.*	*Manillas. Coils.*	*F. Waste.*	*W. Fibre.*	*Sizing.*
	Bales.	Bales.	Bales.	Coils.	Bales.	Bales.	Bags.
Train, Smith & Co.....	1,614	541	605	95	867	....	611
C. A. Cheney.....	654	96	105	90	362	....	632
Horace Dutton & Co	512	623	....	303	....	....	....
E. A. True.....	....	116	....	....	....	....	....
W. P. Corne.....	11	....	....	....	....	....	....
Wheelwright Paper Company.	....	71	....	....	....	1,126	....
Crocker, Burbank & Co.	....	516	....	....	....	812	....
C. P. Sumner & Co	....	64	....	....	....	810	....
Atterbury Brothers	....	56	....	....	....	817	....
F. Salomon.....	471	....	....	....	....	340	....
S. D. Warren & Co.	220	....	....	....	....	....	....
R. H. Overton & Son.	....	....	....	....	....	....	....
Geo. W. Millar & Co.	....	156	....	....	....	....	....
Warren & Co.....	....	10	....	....	....	....	....
J. B. Moors & Co....	....	82	....	....	....	....	....
E. W. McClintock....	....	....	256	....	....	....	55
Thomas Groom & Co.	....	....	....	....	....	350	....
Baeder, Adamson & Co.	....	....	....	....	....	370	....
Fred. Bertuch & Co.	....	....	....	....	....	80	....
Morey & Co.....	....	....	....	....	....	....	....
R. Helwig.....	....	....	....	....	....	....	....
Page, Newell & Co....	....	....	....	....	....	....	....
Schultz & Buckgaber	....	....	....	....	....	....	....
Totals.....	3,484	2,805	2,067	394	1,809	3,307	1,800

EXPORTS of Paper, &c., from New York for the Week Ended September 3, 1895.

BOOKS, to Argentine Republic, 1 cs.; Bremen, 1 cs.; Japan, 1 cs.; British possessions in Africa, 3 cs.; Liverpool, 12 cs.; British Australasia, 12 cs.; Central America, 2 cs.: British West Indies, 28 cs.; Hamburg, 1 cs.; London, 38 cs.; New Brunswick, 1 cs.; New Zealand, 417 pkgs.; Southampton, 8 cs.; San Domingo, 1 cs.; Venezuela, 1 pkg.

PAPER, to London, 156 pkgs.; Milan, 1 cs.; Mexico, 173 pkgs.; Argentine Republic, 24 pkgs.; Bremerhaven, 27 cs.; Antwerp, 7 cs.; Brazil, 216 pkg.; Bremen, 94 pkgs. and 6 cs.; British Australasia, 45 pkgs; Chili, 19 pkgs.; British West Indies, 606 pkgs.; Copenhagen, 2 pkgs.; Central America, 81 pkgs.; Cuba, 300 pkgs.; Danish West Indies, 112 pkgs.; Genoa, 6 cs.; Gothenburg, 3 cs.; Havre, 1 cs.; Hamburg, 26 cs.; Hayti, 5 pkgs.; Liverpool, 54 cs.; Peru, 1 cs.; Southampton, 7 cs.; San Domingo, 80 pkgs.; Colombia, 192 pkgs.

STATIONERY, to Argentine Republic, 3 cs.; Brazil, 4 pkgs.; British Guiana, 1 cs.; Berlin, 1 cs.; Cuba, 2 cs.; Bolivia, 1 cs.; British Australasia, 9 cs.; Peru, 2 cs.; British West Indies, 6 cs.; Chili, 13 cs.; Copenhagen, 1 cs.; Central America, 9 cs.; Genoa, 1 cs.; Danish West Indies, 1 cs.; Ecuador, 3 cs.; Hayti, 4 cs.; Hamburg, 1 cs.; Japan, 1 cs.; Liverpool, 1 cs.; London, 80 cs.; Mexico, 3 cs.; San Domingo, 6 cs.; New Brunswick, 19 cs.; Colombia, 6 cs.

SANDPAPER, to Argentine Republic, 28 cs.; Brazil, 5 pkgs.; Bolivia, 2 cs.; Chili, 34 bs.; Copenhagen, 18 bdls.; Cuba, 1 bale; Hamburg, 13 bdls.; London, 76 bs.; Mexico, 2 pkgs.

TWINE, to Argentine Republic, 4,085 bs.; Brazil, 92 pkgs.; British Guiana, 1 bale; Chili, 1 bale; British West Indies, 3 bs.; Cuba, 1 pkgs.; Hayti, 3 bs.; Mexico, 1 bale; New Zealand, 1 bale; Uruguay, 3,090 bs.; Colombia, 7 bs.; Venezuela, 16 bs.

PLAYING CARDS, cases, to New Zealand, 4; Southampton, 1; Bordeaux, 1; British possessions in Africa, 1; British Australasia, 7; Chili, 1; Hayti, 3; Central America, 1; London, 29.

TAGS, cases, to Brazil, 1; British Australasia, 1; Glasgow, 4; New Zealand, 4.

WALL PAPER, to British West Indies, 56 rolls; Central America, 7 cs.

STRAWBOARD, bundles, to Cuba, 6.

PAPER CAPS, cases, to Brazil, 1.

CARTONS, bales, to Cuba, 1.

AGGREGATES AND VALUES.

Wood Pulp, bdls.....	—	—
Wood Pulp, rolls.....	307	$900
Cotton Waste, bs.....	234	5,130
Rags, bs.....	—	—
Paper, reams.....	—	—
Paper, pkgs.....	2,490	18,288
Paper, cases.....	373	5,841
Books, cases.....	110	9,896
Stationery, cases.....	102	12,659
Rosin, bbls.....	5,111	14,329
Totals.....	8,837	$67,092

Exports General Merchandise for the week ended September 3, 1895..... $5,499,543

TRAIN, SMITH & CO.,
IMPORTERS OF AND DEALERS IN
—ALL DESCRIPTIONS OF—
Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON.
BRANCH OFFICES: 140 NASSAU STREET, NEW YORK. 14, 16, 18 & 20 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
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86, 88 & 90 COVE ST., BOSTON, MASS.
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ESTABLISHED 1855.
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—IMPORTERS AND PACKERS OF—
PAPER STOCK.
Offices: 257 Front Street. Packing House: 312 Water Street, New York.
SPECIAL ATTENTION CALLED TO OUR OWN PACKING.

F. BREDT & CO.,
No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.
JOSEPH PORRITT & SONS'
ENGLISH FELTINGS.
TRADE MARK.
ALSO IMPORTERS AND DEALERS IN
MARINE BLUE (Aniline) for News Paper Mills,
Jacketing, Roll Cloth, Double Extra Canvas, Ultramarine Blue.

A. D. LITTLE, GRIFFIN & LITTLE, PAPER MILL CHEMIST,
Office and Laboratory: 103 Milk Street, Boston.
EXPERT IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

A. WERTHEIM & CO.,
HAMBURG, GERMANY,
Exporters of all Grades of Sulphite and Soda Pulps.
SIGMUND GOLDMAN, Agent for the United States and Canada,
BENNETT BUILDING, 99 NASSAU STREET, NEW YORK.

COCHRANE CHEMICAL CO,
55 Kilby Street,
BOSTON, MASS. Manufacturers of Alum.
Highest tests, free from iron, and all other grades used by paper makers.
Also manufacturers of ACETIC ACID, SULPHURIC ACID and other chemicals.

PERRY KRUS, Prest. OTTO F. SOHM, Sec.
PIONEER PAPER STOCK CO.,

PACKERS AND DEALERS IN
PAPER STOCK,
318-324 S. DESPLAINES ST.,
CHICAGO.

CASTLE & GOTTHEIL,
—IMPORTERS OF—
Sulphite and Soda Pulps,
LINEN AND COTTON RAGS,
JUTE STOCKS, SIZING, &c.
TIMES BUILDING, 41 PARK ROW
ROOMS 188, 189 & 190.
NEW YORK.

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Western Office—R. B. DUVALL, General Manager, 56-58 LA SALLE STREET, CHICAGO, Ill.

Boston Office—A. L. DELESDERNIER, General Manager, 67 FEDERAL STREET, BOSTON, Mass.

London Office—ARTHUR MORRIS, General Manager, No. 1 MITRE COURT, FLEET STREET, LONDON, England.

NEW YORK: SATURDAY, SEPTEMBER 7, 1895.

IT is a little out of our line, but it is well to mention that the Government seems to be pulling out of the business of making industrial experiments for the benefit of private capital. The case in hand is sorghum sugar, on which the Agricultural Department has spent some $500,000 in experiments in trying to find a way of making merchantable sugar which will not make the last state of the cane grower worse than his first. Such work as this is the legitimate business of private enterprise and capital, which hopes to profit by it, and it is satisfactory to note that Government officials are getting to be of the same opinion.

IT is said that the forestry exhibit to be made by the Government at the Atlanta Exposition will be the most complete ever made. So far, so good; but what is most wanted from the conservators of the public domain, particularly those charged with the duty of preserving the timber tracts, is thorough, painstaking care of our forests and the adoption of methods calculated to secure their renewal and preservation. We have forestry commissions delegated by States and by the general Government to look after our vast woodland and prevent the denudation of territory. Little has yet been done to ward off the encroachments of unscrupulous loggers, or to renew the growths which have been destroyed by the axe of the woodman. The failure of water powers, the aridity of soil, and the suffering caused in various sections are chiefly due to the exhaustion of the forests, and it is high time that civil authority should intervene to restrict the waste now continually going on. Pulp manufacturers and paper makers are as much concerned in this—in some degree more so—as anyone else. Forestry protection does not necessarily mean the cutting off of supplies. Well managed, it can and will maintain the balance of supply and demand.

A NOTABLE fact in English labor statistics, mostly for 1893-4, is that the working classes were more successful in cutting down the hours of labor than in raising the rate of wages. Another fact equally well worth mentioning is that there was, after the workers got into the swing of shorter hours, no appreciable diminution of either quality or quantity of output. In other words, it seems to have been proved that in most instances the work hitherto done in nine or ten hours can be equally well done in eight or nine. Literally, of course, a diminution of hours without any decrease in wages is really an advance in the latter.

EACH week as it comes and goes brings fresh evidences of the better and surer feeling which is prevailing in industrial and trade circles. Whatever amount of despondency may have been present at the beginning of the season seems to have departed, giving place to a cheerful hopefulness and confidence in both the present and future. The fall season has opened well, and from all classes of industry, trade and commerce the reports for August read well and are full of encouragement. In regard to this matter *Bradstreet's* says: "The concluding week of August surprises even the more optimistic with a striking increase in the volume of business with jobbers, in such centres as New York, Boston, Baltimore, Chicago, Kansas City, St. Louis, St. Paul and Minneapolis, and to a more moderate extent in distributing points in the South Atlantic and Gulf States. The autumn demand is making itself felt, with the prospect for further improvements in the immediately succeeding weeks. It is to be noted, also, that demands for money for use in the South and West continue in increasing volume as an attendant upon the movement of the large crops of those sections. Railroad earnings are increasing, the improvement on sixty-nine lines of road during the third week in August averaging 1.25 per cent., while the future promises a very much greater increase. The phenomenal activity of the iron and steel trade continues, with no prospect of abatement." Bank clearings emphasize the above encouraging report, being 19 per cent. more than for the last week of August, 1894, 36 per cent. more than for the same period in 1893, and only 8 per cent less than for the same week in 1892.

ONE of the "barnacles" which have attached themselves firmly to the present contradictory and wasteful bankruptcy laws is that of "friendly receiverships," which, as a contemporary observes, are too often created "not for the purpose of equitably winding up the affairs of a concern, but for the purpose of preventing creditors from suing it." Judge Freedman, in a case involving the receivership of an iron manufacturing company, declared the proceedings void, because, in his opinion, the receivership was desired "for the very purpose of hindering and delaying, if not to defraud, certain creditors who threatened suit," and a "receivership created, not to wind up an insolvent corporation, but to protect a solvent corporation from the annoyance of creditors who pressed for sums due them, was null and void." It appears that the application did not show that the company was insolvent, or proposed to distribute its assets. No notice was given to the Attorney General, as required for the protection of creditors or shareholders. A contemporary observes "that such a receivership sometimes saves a business that the attack of a creditor or two would dissipate, but on the whole this sort of thing does more harm than good. A creditor is entitled to have his money, unless the debtor be insolvent, in which case it is usually better that the business should be closed out. There is not much room in the business world for concerns that are not solvent enough to pay what they owe, but are solvent enough to continue in business."

PAPER STOCK IMPORTS.

The imports of rags and other paper making fibres—jute butts excepted—at the port of New York during the month ended August 31, as reported, amounted to 15,076 bales and 454 tons, the difference in quantities compared with the corresponding month of 1894 being an increase in rags of 2,293 bales, in old papers a decrease of 35 bales, and in manilla stocks a decrease of 1,710 bales. There was no wood pulp imported during August, and of chemical fibre 116 tons more than the July imports were brought in. The appended tabulation shows the quantities of paper making materials of the kinds mentioned which were reported as having been imported during the month of August for the last five years:

	1895.	1894.	1893.	1892.	1891.
Rags.....bales.	4,920	2,627	3,823	7,701	7,172
Old Papers.....	137	172	646	975	498
Manilla Stocks..	10,019	11,729	4,946	12,665	10,981
Wood Pulp,tons.	....	....	....	....	215
Wood Fibre.....	454	225	1,331	3,000	1,344

The arrivals from the different ports were as follows: Antwerp, 117 bales rags, 184 tons chemical fibre, 1,140 bales manillas; Bremen, 26 bales rags, 28 bales manillas; Bristol, 364 bales manillas; Calcutta, 696 bales manillas; Dundee, 143 bales manillas; Glasgow, 6 bales rags; Hamburg, 1,712 bales rags, 26 bales old papers, 200 tons chemical fibre, 1,295 bales manillas; Hull, 1,312 bales rags, 70 tons chemical fibre, 1,151 bales manillas; Leghorn, 427 bales rags; Liverpool, 68 bales rags 2 bales old papers, 2,109 bales manillas; London, 761 bales rags, 109 bales old papers, 686 bales manillas; Marseilles, 600 bales manillas; Rotterdam, 303 bales rags, 1,455 bales manillas, and Stettin, 188 bales rags, 352 bales manillas.

Watermarks.

BY DANDY.

An Eastern man who was running free before the wind—this is the yachting season, you know—says that there are some people who are everlastingly asking questions. "For instance," he said, letting out his main sheet a little, "we make a certain brand of toilet paper, and on the fixture which holds it we put a notice that the fixture is to be screwed to the wall at a certain height, 'preferably on the left-hand side.' One day we received a letter from a countryman asking whether it was the left-hand side as one entered the bathroom or as one left it. We replied, 'Yes.'"

Then the raconteur hauled in his main sheet, stood off on another tack, and said: "I was at a coroner's inquest in a murder case some time ago, and one witness, who was supposed to know more about the murder than he was willing to admit, was very persistent in denying that he had been in the cellar where the body was found. The examiner drifted from that subject and then suddenly asked, 'What was the first thing you saw when you went downstairs into the cellar?' The witness never turned a hair as he said, 'By gosh, you haven't got me in the cellar yet.'"

"That's the way with my partner. He was always poking fun at me for going fishing. This year he was induced to go up into the Maine woods and he sent me a postal card which he wrote at 6 A. M. one day, just as he was going into the woods. I've got him in the cellar, sure."

A New York paper dealer and others went fishing recently in Barnegat Bay. He says that 239 fish were caught and then the bait gave out. If the bait hadn't run short they might have caught a thousand and one fish, but I will not say any more about that. They came ashore and the fish were loaded in eight baskets. He sent for his team and darkness came on before it reached him, he and his companions in the meantime waiting at a railroad station at a place where a country road crossed the tracks.

While they were waiting, along came a fellow who had no fish, but who was strongly under the influence of bait, and, while he was talking to them, suddenly there were heard the rapid beating of hoofs. The man who had his bait with him shouted: "Look out, it's a runaway!" and scared by his cry the paper man and his companions sought safety, each taking refuge behind convenient trees. When the hoof beats stopped a forlorn looking horse poked his head over the fence rail of an adjoining field. If you want to wake up that paper man just drum with your fingers on a desk in imitation of a galloping horse.

"Yes," he said to a newly made acquaintance, "I shall always remember you by thinking of Doe, who is everlastingly around." "How is that?" was the natural response. "Oh, you're so different!" came the answer.

A paper stock man who is the blushing father of a blooming boy of tender years was one evening requested by his wife to take care of the blooming boy, who was crying; and then she added: "You ought to; he's half yours." "All right," said the brute; "just let my half cry."

Trade Talks.

Thos. Pike Vernon—We are manufacturers of tissue exclusively, and the development in making those as well as all other kinds of paper is about equal to the progress which has been made in printing. Printing is a fine art and it has been brought down to science. So in paper manufacturing processes have been improved, more and larger mills have been built, bigger machines have been constructed and come into use, and more paper is made. The same is true of tissue paper. It is said that the United States does not make the best tissues in the world, but that the best qualities come from abroad—from France and Germany. There is no reason, however, why this country should not make as good a tissue paper as is made anywhere. We do not make colored tissues, but copying paper only, or such as is used in letter books and the like. Now, here are two samples of such paper. One is German and the other American—our own. The German is a little smoother, you will notice, a little more finished than the other, but so far as copying is concerned they are equally good. Criticism is made in some quarters as to American tissue papers being defective, and the allegation is made that a tissue which has pinholes in it is not only imperfect, but that it is not fit to be used in a letter book. The fact is, it is just the other way, if anything. The existence of pinholes is an indication that the paper is porous, and tissue must be porous and thin in order to take a good letter press copy. Of course, where necessary, as perfect paper can be made here as anywhere. It is merely a question of time and care. The process must be constantly watched, and the machine must run much more slowly. As a matter of fact, I do not recall at this moment, and I do not know positively of, more than one case where a perfect tissue is absolutely necessary, and that is in the manufacture of carbon paper. This paper is inked only on one side and is used by business men, lawyers and others in duplicating copies of a single business form or something or other, and if there were any pinholes in the sheet the ink during the process of making the carbon paper would get on to the back of the sheet, and when passed through a typewriter in manifolding the ink would make a blur on the face of the sheet back of it, which business men would not like; so that the most perfect paper to be found has to be used for this purpose, and the greater part of it so used is imported. The New York manufacturers of this kind of paper get quantities of it from abroad. I do not know of any other place where a tissue paper free from pinholes is needed. Under such circumstances it seems to me that Americans should be patriotic in the use of tissues in their business, and where all things are equal give preference to the home made article. A great deal of foreign made tissue is used in this country, and in addition to this one of the largest blank book manufacturers in the United States told me that although he had used the domestic tissues for years he was now so dissatisfied with their inferior quality that he had decided this year to send abroad for his supply. They must make tissues very cheaply abroad, for the difference in the selling price in this market between the domestic and foreign products is only 2 cents per ream. Just think what that means and how low the foreign article must be sold in its home market if, after paying all expenses, it is only 2 cents on a ream more than the domestic tissue sells for in its own market! First, it must be packed and cartage paid at both ends. Then there are freight charges, and last, but not least, when it arrives here a duty of 35 per cent. must be paid.

Changes, Removals and New Firms.

J. R. Griffin, publisher, Alameda, Cal., has sold out.

G. D. Doane, printer, Los Angeles, Cal., has sold out to Geo. Rice.

The Knox Art and Stationery Company, Galesburg, Ill., has been incorporated by A. W. Snyder, Edward W. Manny and Anna Davis. Capital stock, $2,000.

Ida A. Adams, stationer, &c., Allegan, Mich., has sold out to A. W. Tripp.

Henderson & Cochran, printers, Sioux City, Ia., have gone out of business.

Beeman & Salter, publishers, Depew, N. Y., have dissolved partnership.

E. D. Jones (Mrs. E. L.), dealer in wall paper, Alamosa, Col., has sold out.

Geo. B. Hall, printer, Indianapolis, Ind., has been succeeded by Hall & Sauer.

J. H. Ward, bookseller and stationer, Cleburne, Tex., has sold out to M. Barber.

Stuart & Norris, publishers, Midway, B. C., have been succeeded by Norris & Lamb.

Fred Knell, bookseller, stationer, &c., Perry, Ia., has sold out to A. W. McPherson.

The Wittenberg Publishing Company, Cincinnati, Ohio, has been incorporated. Capital stock, $10,000.

George La Monte, successor to Augustine Smith & Co., has removed to 101 and 103 Fulton street, New York.

R. G. McPherson, bookseller, &c., Greenville, S. C., has been succeeded by McPherson, Houston & Co.

The Saranac River Pulp and Paper Company, Plattsburg, N. Y., has filed with the Secretary of State a certificate of increase of capital stock from $15,000 to $100,000.

The Chatfield Paper Company, New Haven, Conn., has been organized as a stock company, with a capital stock of $30,000. Wm. E. Beecher and Wm. R. Shaffer are now members of the company.

The *Review* Printing and Stationery Company, Decatur, Ill., has been incorporated by J. P. Drennan, H. C. Schaub, Jerry Donahue, H. M. Bragg and Thomas D. Parker. Capital stock, $10,000.

The *Recreation* Magazine Company has been incorporated to publish a magazine known as *Recreation* and do a general book and job printing business. Capital, $20,000; and directors, Emmor A. Jackson, James E. Thursby and George O. Shields, of New York.

Edwin Butterworth & Co. have succeeded to the paper stock business of the late C. A. Cheney, at 58 Federal street, Boston, Mass., and will conduct it in conjunction with their New York house. The Boston office will be under the management of Charles H. Wood, who was for many years connected with Mr. Cheney.

The New York and College Point Print Company, of College Point, Queens County, N. Y., has been incorporated to engage in the business of publishing, book and job printing. Capital, $3,000; and directors, Philip Oppenheimer, of New York, and Max Oppenheimer and Bessie Oppenheimer, of College Point.

The business of J. F. Tapley, bookbinder, 9 Bond street, New York, has been incorporated under the laws of the State of New York as a stock company under the name of J. F. Tapley Company, but will continue under the same management as before, with J. F. Tapley as president and treasurer and Alfred C. Wessmann as secretary.

Homer Ruggles, of Ruggles & Manning, booksellers and stationers, Pittston, Pa., has retired from the firm and disposed of his interest to John Crindle, of Moosic, who will hereafter be associated with Mr. Manning in the business. The new firm proposes to increase its facilities, and will add to its present business that of dealing at wholesale in paper, books and stationery.

The Mankato Blank Book Manufacturing Company, Mankato, Minn., has been incorporated to manufacture blank books, paper boxes and general office supplies. The officers are: J. W. True, president; George W. Sugden, vice-president; John H. Curryer, manager and treasurer. The directors are: Frank Heywood, Minneapolis, Minn.; John H. Curryer, Fred O. True, George W. Sugden, W. E. Young and J. W. True, all of Mankato. Capital stock, $12,000; $8,500 paid in.

Failures.

John W. Kerrick, stationer, Stockton, Cal., has applied for relief in bankruptcy.

The Star Paper and Box Company, Springfield, Ohio, has settled with its creditors at 40 per cent. cash.

Norman W. and Roderick C. Penfield, composing the firm of Penfield Brothers, printers and publishers, Asbury Park, N. J., made an assignment to John J. Joyce, a lawyer, of Newark, N. J., on August 30. The firm published *Peterson's Magazine*, *Arthur's Home Magazine*, the *Medical and Surgical Reporter*, *Christianity in*

Earnest, the *Daily Press* and *Shore Press*. The firm has been in business about ten years, and for some time past has had a branch office in New York. The causes leading to the failure are said to be inability to collect accounts and poor management.

The creditors' petition in the case of Charles Hammond, stationer, San José, Cal., was filed by the following named firms in San Francisco, claiming to be creditors in the amounts specified: Sanborn, Vail & Co., $319.92; Cunningham, Curtiss & Welch, $171.46; Payot, Upham & Co., $115.14; San Francisco News Company, $16.07; Mysell & Rollins, $38.43; Bancroft & Co., $90.53, the total indebtedness being about $759. It is alleged that on July 29, 1895, the respondent, Charles Hammond, with fraudulent intent made a sale of the merchandise in the business to Mrs. S. E. Greathead, at the time knowing that he was insolvent, and that he had not sufficient property with which to satisfy the claims of his creditors.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
E. R. Frost, Merrimac, Mass.	$2,125

MIDDLE STATES.

Christian Gaul, Vineland, N. J.	1,500

WESTERN STATES.

H. H. McNeil (H. H. McNeil & Co.), Phœnix, Ariz. (Real)	2,200
Henry K. Johnson, Chicago, Ill.	200
Adoniram J. Thayer, Chicago, Ill.	3,500
— Welch (Wells & Welch), Des Moines, Ia.	574
Ed. C. Devine, Minneapolis, Minn.	200
J. E. Carpenter, Seward, Neb.	300
Jacobs & Lander, Dayton, Ohio.	580
F. W. Cilly, Oacoma, S. Dak.	135
John J. Grief, Uniontown, Wash.	212

SOUTHERN STATES.

H. L. Marx, Carthage, Mo. (T. D.)	711
A. S. Bloom (A. S. Bloom & Co.), Kansas City, Mo.	181
Hayes Printing and Binding Company, F. M. Hayes secretary, Kansas City Mo., (T. D.)	750
Amelia C. Ford, St. Joseph, Mo. (B. S.)	300
M. Sherman Abramouwitz (St. Louis *Gazette*), St. Louis, Mo.	100
Sadler & Moore, Huntington, W. Va.	300

DISTRICT OF COLUMBIA.

George P. Killian, Washington, D. C. (T. D.)	550

LIENS DISCHARGED.

H. H. McNeil (H. H. McNeil & Co.), Phœnix, Ariz. (Real)	1,000

Obituary.

THEODORE W. BAYAUD.

Theodore W. Bayaud, one of New York's well-known merchants, died suddenly at his residence, Ocean Terrace, Staten Island, at 7 P. M. on August 29. Mr. Bayaud had been enjoying general good health, when he was stricken with apoplexy at 10 o'clock the evening before he died. The funeral services were held at Trinity Church, New York, last Sunday.

Theodore W. Bayaud was born in New York in 1821, and was seventy-four years of age at the time of his death. He was the son of John Bayaud, an importer of French products, and entered the same line of business in 1846. He continued in this branch of trade until 1870, when he began the manufacture and sale of paper makers' supplies. He was largely interested in the talc industry at Gouverneur, being of the firm of Bayaud & Stevens, and of the Natural Dam Pulp Company, and at the time of his death was one of the directors of the International Pulp Company. By his social and business friends Mr. Bayaud was known as a kind-hearted, charitable man, and was esteemed by all who knew him. He leaves two sisters and one brother.

E. C. Palmer, of E. C. Palmer & Co., wholesale dealers in paper, New Orleans, La., is dead.

William G. Oliver, of the firm of Valleau & Oliver, printers, San Francisco, Cal., is dead.

Fires.

Daniel W. Bixby, bookseller and stationer, St. Catharines, Ont., has been damaged by fire and water.

In Town.

F. L. Stevens, North Hoosick, N. Y.; Robert Day, Springfield, Mass.; F. D. Howland, Sandy Hill, N. Y.; A. C. Robertson, Montville, Conn.; A. Spies, Menominee, Mich.; Thomas Knapp, Chicago, Ill.; Adam Laurie and Adam Laurie, Jr., Hamilton, Ohio; Col. S. P. Train, Boston, Mass.; Wellington Smith, Lee, Mass.

Alonzo J. Whiteman, formerly of Duluth, Minn., and once proprietor of the Dansville (N. Y.) Pulp and Paper Mills, has been convicted in San Francisco of forging a check for $500, and sentenced to nine years in the penitentiary. A stay of thirty days was granted by Judge Wallace to enable Whiteman to make an appeal.

Accidents.

A machine tender in the paper mill of the Glens Falls Paper Mill Company was badly burned on the hand recently by touching a live electric wire.

Engineer Stevens was severely scalded by steam in the mill of the Carew Manufacturing Company, South Hadley Falls, Mass., but is recovering from his injuries.

Personals.

Victor Friedlander, with Castle & Gottheil, sailed for Europe last Thursday on the Augusta Victoria.

A. L. Wagg, representative of the Albany Felt Company, will visit the trade in the interest of that concern.

Thomas Knapp, of the Thomas Knapp Printing and Binding Company, Chicago, visited New York during the past week.

Charles D. Thompson, the American representative of Bowman, Thompson & Co., sailed for Europe last Wednesday on the Teutonic.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, September 6, 1895.

THE MONEY MARKET.—There was a fair business in the stock market, but nearly all of the moving shares closed at lower figures. The regular rate for call loans on stock collateral was 1 per cent., but there were a few loans at a slightly higher figure. Time loans are quiet and easy, with large offerings. Quotations are 1½ per cent. for thirty days, 2 per cent. for sixty days, 2½ per cent. for ninety days to four months, and 2¼@3 per cent. for five to seven months on good marketable collateral. In commercial paper the demand is small, but country paper continues to come out fairly well. Quotations for paper are 3½@3¾ per cent. for sixty to ninety day indorsed bills receivable, 3¼@4¼ per cent. for four months' commission house names, 4@4¼ per cent. for prime four months', 4¼@4¾ per cent. for prime six months', and 5@6 per cent. for good four to six months' single names. The market for foreign exchange was strong and the supply consisted chiefly of gold bills. Posted rates were $4.89½ for sixty days and $4.90½ for sight. Actual rates were $4.88¼@4.89¼ for sixty days and $4.89¾@4.90¼ for sight.

THE PAPER TRADE.—There is little change to be noted in the paper market. There is a great deal of complaint as to low water, and mills having plenty of orders have had great difficulty in getting out their product. News is in good demand and the New York quotation from mills is 2¼@2.30. Low grade Manillas are in steady call and prices are firm. Book and Writing mills are not crowded as a rule. Some of them have their product well in hand, but others are looking for orders very actively.

JUTE BUTTS.—There has been some business done this week, a Western mill taking 4,000 bales paper quality, to be shipped before the close of October, at a price a shade above 1c., but not definitely reported. Yesterday there was another sale on spot at 1.10c., and the spot market is quoted at 1⅛@1 3-16c. Calcutta is quoted at 1 1-16c., but no transactions are reported, the crop being late and offerings light. The statistical position, as given in the September circular of Cabot, Ray & Co., is as follows: Imported to the United States, 1892, 232,387 bs.; 1893, 331,738 bs.; 1894, 228,765 bs. Consumed in the United States, 1892, 222,609 bs.; 1893, 368,336 bs.; 1894, 234,915 bs. Stock, New York and Boston, January 1, 1895, none. Imported, New York and Boston, January 1, 1895, 370,401 bs.; 1894, 173,454 bs.; 1893, 329,521 bs. Stock, New York and Boston, September 1, 1895, 2,300 bs.; 1894, none; 1893, 16 363 bs. On passage for United States, July 23, 1895, and by cable to August 31, 1895, 28,254 bs.; 1894, 37,761 bs.; 1893, 10,537 bs. Visible supply to January 1, 30,554 bs.; 1894, 37,761 bs.; 1893, 26,905 bs. Consumption since January 1, 1895, 368,101 bs.; 1894, 179,604 bs.; 1893, 335,901 bs. Delivered to consumers past thirty days, 12,485 bs.; 1894, 39,444 bs.; 1893, 24,136 bs. The same circular speaks of the market as follows: "Market for the month in Calcutta has been weak, with sales light, the crop news being favorable. Jute packing is reported large. The market is nominal at 1 1-16c. to 1⅛c. for shipments. Sailings for September nil. Deliveries to consumers for the month have been: To bagging manufacturers, 8,328 bales; to paper manufacturers, 4,157 bales. Spot stock, 2,300 bales paper quality. Supply to January 1, paper quality, 8,353 bales; owned by bagging manufacturers, 22,201 bales."

WOOD PULP.—Ground wood remains scarce and high, being quoted up to $24 delivered. The product is much restricted.

WOOD FIBRE.—There is no change in the market for Chemical Fibre worthy of note. There is a constant call for stock, but prices are generally unchanged. Domestic Bleached Soda is quoted at 2c. Domestic Sulphite is quoted at 1¼@2¼c., as to quality, for Unbleached, and 3c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, —@3.15c.; Bleached, do., 3¼@4c.; Bleached Straw Pulp, 3.80c. This week there were 90 tons of Chemical Fibre imported at this port, being all from Hamburg.

FOREIGN RAGS AND PAPER STOCK.—There has been a steady reduction in the stock of foreign rags here, and the present supply is small, compared with what it has been for two or three years past. Bank holdings have been pretty well cleaned up, and importers' lots have been squeezed into as small a compass as possible. Prices are low, and sales are only for immediate wants. Imports for the week aggregated 2,792 bales and 90 tons, being 822 bs. rags, 2 bs. papers, 90 tons chemical fibre and 1,968 bs. manillas. Ports of shipment and quantities are as follows: Calcutta, 696 bs. manillas; Hamburg, 468 bs. rags, 90 tons chemical fibre, 490 bs. manillas; Hull, 207 bs. rags, 112 bs. manillas; Liverpool, 68 bs. rags, 2 bs. papers, 670 bs. manillas; London, 79 bs. rags.

DOMESTIC RAGS.—The market for domestic rags is quiet, and while there is a steady outward movement it is not of large lots.

BAGGING, &c.—The Bagging market is slow and low. Consumers do not seem to be interested in the purchase of supplies, the low figures ruling being apparently no inducement. It is reported that No. 1 Gunny is offered to mills at 90c.; but importers here deny this. There has been, however, a sale of 100 tons on spot at 92½c. We also note sale 50 tons Mixed Bagging on spot at 85c. Domestic Rope is scarce, and is offered to dealers at 1.95c. Lots of foreign are taken up as fast as offered, and we note sale 75 tons "Anchor" to dealer at 1.90c., with "Crown" quoted at 2c. There has been a sale of 50 tons Continental Jute Threads at 1.90c. Manilla imports for the week aggregated 1,968 bales, being 696 bs. from Calcutta, 490 bs. from Hamburg, 112 bs. from Hull and 670 bs. from Liverpool.

OLD PAPERS.—There is a fair call for manillas and folded papers. We quote: No. 1 Hard White Shavings, 2.15@2½c.; No. 1 Soft White do., strictly free from wood, 2@2.05c.; Soft White, do., ordinary, 1¾@2c.; Old Ledgers, 1¾c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1¼c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News (overissues), 50@55c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—The demand is moderate, and values are unchanged. We quote: Long Rye at 50@60c.; Short Rye at 40c.; Wheat at 35@40c.; Oat at 40c.

ROSINS.—The market for Rosins was dull. We quote: Common to Good Strained, $1.72½@1.80; E, $1.85@1.90; F, $2; G, $2.05@2.10; H, $2.15; I, $2.40; K, $2.55@2.60; M, $2.80; N, $3.20; W G, $3.40.

CHEMICALS.—The United Alkali Company, Brunner, Mond & Co. and the Solvay people have fixed up matters on the other side, and have been buying up outside makers of heavy chemicals. A preliminary advance of 10s. a ton in Alkali has been made on the other side, and Alkali, Caustic Soda and Bleaching Powder are all firmer here. Agents here are not fully conversant with details of recent transactions. In the local market Bleaching Powder is in light supply and is quoted at 1¾c. Caustic Soda is strong, but as yet no advance is to be noted. Alkali is in better movement, and on spot jobbing parcels range from 1@1.05c. During the week there have been sales of Bleach at 1.85@1.90c.; Soda Ash at 1¾c.; Caustic Soda, 2.10c., and Alkali, 1@1.05c.

CHINA CLAY.—The demand, while not brisk, is somewhat better than for some time past, consumers' stocks evidently being light, although they are not disposed to take more than they need for present use. The market presents a steady appearance, and prices are unchanged at $11@16 per ton, as to quality and size of order.

TWINES.—There is a good call for stock and prices are regular. We quote: Sisal Hay Rope 5½c.; Sisal Lath Yarn, 5c.; Jute Ready, 5@6c. Twines—Jute, 18, 10½@11c.; 24, 10@10½c.; 36, 9@9½c.; Jute and Hemp, 18, 13@14c.; 24, 12½@13½c.; 36, 12@13c.; Hemp, 18, 16c.; 24, 15½c.; 36, 15c.; Marlines, Jute, 4½, 9c.; 6, 8½c.; 8, 7½c.; Jute and Hemp, 6, 11c.; 8, 9c.; American Hemp, 4½, 14c.; 6, 13c.; 8, 12c.; Russian Hemp, 4½, 14c.; 6, 13c.; 8, 13c.

COAL.—The market is unchanged and business is not brisk.

EDWIN BUTTERWORTH & CO.,
MANCHESTER, ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
P 83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street.
JAMES FIRNIE, A. S. DEMAREST, } Managers.
Branch Office at Boston, 58 Federal St., C. H. Wood, Mgr.

WATERBURY
Felts and Jackets.
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to *every* grade of paper from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.16	@	$0.21
Flat Caps, superfines	11½	@	14
Flat Caps, fines	11	@	13
Flat Caps, engine sized	7	@	9
Blotting, American	8	@	12
Blotting, English	17	@	....
Book, super sized and calendered	5	@	8
Book, super sized and tinted	5	@	8
Book, extra machine finish	5	@	....
Book, machine finish, low grade	4½	@	5
News	2½	@	3
Poster	3	@	....
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3¾	@	4
Hanging, brown	2¾	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9¾
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	60	@	80
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¾	@	6¾
Manillas, No. 2	5	@	6
Manillas, Bogus	2½	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	35	@	60
Hardware, light colored, No. 1	4½	@	....
Hardware, No. 1, glazed, tarred	4½	@	....
Hardware, No. 1, glazed	5	@	....
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	30.00	@	40.00
Strawboards, air dried, No. 1, ℔ ton	40.00	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	....
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	65	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	52
24×36, from 24 to 26 lbs. ℔ rm	....	@	48
22×32, from 24 to 26 lbs. ℔ rm	45	@	....
20×30, 21 lbs., ℔ rm	....	@	34
20×30, from 14 to 17 lbs. ℔ rm	26	@	....
16×22, from 12 to 13 lbs. ℔ rm	23	@	....
18×28	....	@	24
15×20, 10 lbs. ℔ rm	....	@	17
15×20, from 7 to 8½ lbs. ℔ rm	....	@	13
14×18	....	@	12
12×16	....	@	11
11×15	....	@	10
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 900 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12x18	....	@	14
14x20	....	@	18
Card Middles, ground wood	5½	@	6¾
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	8	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Woolen Rags.

Comforter Stock	....	@	....
White Woolens	8	@	....
Blue Gray Stockings	7	@	8
White Stockings	10	@	12
Blue Flannels	6	@	....
Reds, old	5½	@	6
Reds, new Shirt Clippings	13	@	16
Mixed Softs, free of Carpets	4½	@	5½
Seamed Cloth	....	@	3½
Skirted Cloth	2½	@	....
New Cloth Clips	7	@	9
New Satinets, clean stock	1¼	@	1½
Satinets, old	65	@	75
Seams	1	@	1½
Delaines, stripped for extract	1½	@	2
Blankets, Woolen	2½	@	2½
Wool Carpets	1½	@	2
White Linseys	5	@	6
Mixed Linseys	75	@	1

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	4¼	@	....
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4½	@	4¾
City Whites, No. 1	3	@	3¼
New Seconds, light	2¼	@	....
New Seconds, dark	1½	@	2
No. 2 Whites	¾	@	1.15
Cotton Canvas, No. 1	3	@	....
Linen Canvas, No. 1	....	@	2¼
Country Mixed, free of Woolens	80	@	....
Seconds (City)	....	@	....
Colors, ℔ 100 lbs	....	@	....
Manilla Rope	....	@	.2
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	1.10	@	1.20
Mixed Bagging, No. 1	⅞	@	1
Burlap Bagging, No. 1	1.10	@	1.15
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	....	@	....
Jute Waste	....	@	1¼

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3½	@	....
Hard White Shavings, No. 1	2¾	@	3
Soft White Shavings, strictly free from wood	2.15	@	....
Soft White Shavings, ordinary	1⅞	@	2
Mixed Shavings, part white	1	@	1⅛
Ledger and Writing	2	@	2.10
Solid Stock	....	@	1¼
Book Stock, No. 1 light	....	@	1¼
Old Newspapers	40	@	....
Manillas No. 1	....	@	1.15
Manillas No. 2	80	@	....
Mixed Manillas	60	@	....
Hardwares, No. 1	65	@	....
Mixed Papers	40	@	....
Commons	25	@	30
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	45	@	50

English Rags, &c.

New Cuttings, cotton	5	@	5½
London Fines, cotton	3½	@	4
Outshots, cotton	2¾	@	3
Seconds	1½	@	1.65
Thirds	1¼	@	1⅜
New Print Tabs	2¾	@	3
Checks and Blues	2¼	@	2½
Light Prints	1½	@	1¾
Light Fustians	2	@	2¼
Dark Fustians	1¾	@	1⅞
Black Calicoes	1½	@	1¾
First Canvas Linen	3¾	@	4
Second Canvas Linen	3	@	....
Gunny Bagging, No. 1	1	@	1.02½
Mixed Bagging, No. 1	80	@	85
Burlaps Bagging, No. 1	....	@	1.20
Rope, Manilla	1.95	@	2
Rope, Manilla, tarred	....	@	2
Jute Threads	....	@	1⅜
Clean Jute Ropes	2	@	2¼
Mixed Rope	1½	@	1¾
Flax Tow	1¾	@	1¾

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2¾
White and Colored Shavings, No. 1	1¾	@	1⅞
White and Colored Shavings, No. 2	1	@	1¼
Cream Post Shavings	2½	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	1½	@	1¾
Books and Pamphlets	1.10	@	....
Old Newspapers	....	@	....
Broken News and Letters	⅞	@	1
Old Blank Books	2¼	@	2½
White and Buff Railway Sheets	1¾	@	....

Japanese Rags.

Blues, Hiogo, ex store	1.30	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1	@	....
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2¼
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¼
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	1⅞	@	....
Cambridge Ochre	11.35	@	....
Caustic Soda, 60 ℔ cent	2.30	@	2.80
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.35	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.75	@	1.80
Rosins, E, ℔ bbl	1.85	@	1.90
Rosins, F, ℔ bbl	2.00	@	....
Rosins, G, ℔ bbl	2.05	@	2.10
Rosins, H, ℔ bbl	2.15	@	....
Rosins, I, ℔ bbl	2.40	@	....
Rosins, K, ℔ bbl	2.55	@	2.60
Rosins, M, ℔ bbl	2.80	@	....
Rosins, N, ℔ bbl	3.20	@	....
Rosins, W G, ℔ bbl	3.40	@	....
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2¼
Sulphuric Acid, 66 ° cent	1	@	1¾
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3½	@	4
No. 2 Whites	2¼	@	2¾
Common Seconds	....	@	2¼
Thirds and Blues	1¾	@	1¾
Southern Mixed Rags	80	@	90
Colors, country	½	@	¾
Colors, city	25	@	30
New Calicoes, light	1¾	@	1⅞
New Calicoes, dark	1	@	1½
Shirt Cuttings, best	3⅞	@	4¼
Shirt Cuttings, good	3¼	@	3½
Shirt Cuttings, unbleached	3¼	@	3½
Shirt Cuttings, unbleached No. 2	2	@	2¼
Shirt Cuttings, cheviots	2¾	@	3
Overall Cuttings, blue	2½	@	2¾
Overall Cuttings, brown	1¾	@	1¾
Shoe Rags, bleached	3¼	@	3½
Shoe Rags, unbleached	3¼	@	3½
Shoe Rags, brown	2¾	@	2¾
Cotton Flannels, bleached	3	@	3½
Cotton Flannels, unbleached	3½	@	3¾
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4	@	4½
Tailors' Seconds	1¾	@	1¾
Tailors' Colors	20	@	25
Cotton Canvas	2¼	@	2¾
Cotton Canvas, No. 2	1¾	@	1¾
Linen Canvas	1½	@	1¾
New Canvas Cutting	3¼	@	3½
Insole Canvas	3	@	3¼
Print Papers, best	35	@	40
Folded News	50	@	....
Old Waste Papers	25	@	....
Manilla Paper, No. 1	1.05	@	1.10
Manilla Paper, good mixed	85	@	95
Manilla Paper, blues	65	@	....
Mixed Book Stock	90	@	1.00
Books and Pamphlets	1.10	@	1.15
Book Stock, light	65	@	70
Ledgers and Letters	1.80	@	1.85
Soft Book Shavings	1¾	@	2¼
Hard White Book Shavings	2¼	@	2¾
Leather Board Chips	70	@	75
Straw Chips	35	@	40
Shivey Bagging	1¾	@	1¾
No. 1 Factory Bagging	1.00	@	1.10
Burlap Bagging	1.00	@	1.10
Burlap Bagging, large pieces	1¾	@	2¼
Kentucky Bagging	1	@	1¼
Mixed Bagging	¾	@	⅞
No. 2 Bagging	½	@	¾
Shakings, soft	½	@	¾
Tarred Shakings	1	@	1¼
Standing Rigging	2¼	@	2½
Standing Rigging, foreign	2½	@	2¾
Bolt Rope	2	@	2.05
Oakum Junk, No. 2	1½	@	1¾
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	¾	@	⅞
Manilla Rope	1¾	@	1⅞
Tarred Manilla	1¾	@	1⅞
Hemp Strings	1	@	1¼
Sisal Strings	1.15	@	1.20
Wool Strings	1.10	@	1.15
Flax Tow	¾	@	⅞
Flax Waste	¾	@	⅞

Chemicals.

Alkali	92½	@	1.00
Aluminous Cake, currency	1¾	@	1⅞
Alum, American ground	1.65	@	1.70
Alum, American lump	1.60	@	1.65
Anti-Chlorine	2	@	2¼
Bichromate Potash	9½	@	10
Bleaching Powder	1.82½	@	2
Caustic Soda, 74 ℔ cent	2	@	2¼
Clay, English, ℔ ton	13.00	@	17.00
Clay, American, ℔ ton	10.00	@	11.00
Copperas, ℔ lb	50	@	55
Extract Logwood	5½	@	10½
Lime, Rockland, ℔ bbl	85	@	90
Prussian Blue, ℔ lb	36	@	38
Prussiate Potash, yellow	18	@	18½
Prussiate Potash, red	35	@	37
Rosin, common strained, ℔ bbl	1.90	@	2.50
Rosin, Medium	2.20	@	3.00
Rosin, extra pale, ℔ bbl	3.00	@	4.50
Sal Soda, ℔ lb	65	@	70
Soda Ash, 48 ℔ cent. caustic	1.30	@	1.50
Soda Ash, 48 ℔ cent. carbonated	1.00	@	1.25
Soluble Blue	2.50	@	3.50
Sugar Lead, white	8½	@	....
Sugar Lead, brown	5½	@	6
Sulphuric Acid, 66°	¾	@	1¼
Terra Alba, ℔ ton	9.00	@	15.00
Ultramarine, ℔ lb	7	@	25
Venetian Red, ℔ lb	1½	@	2½
Vitriol, Blue	3½	@	4
Yellow Ochre	½	@	1

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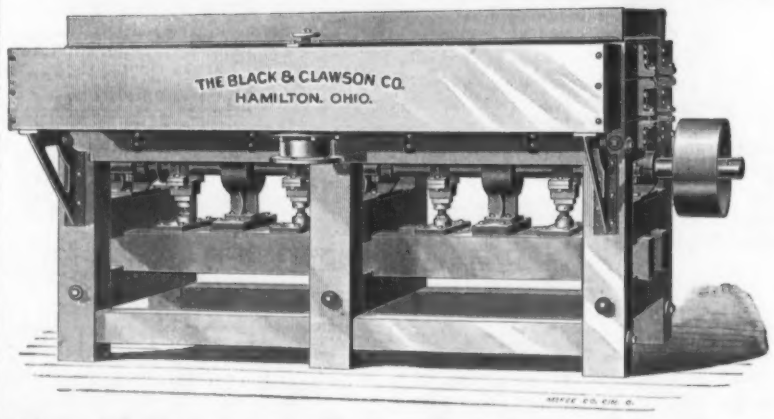

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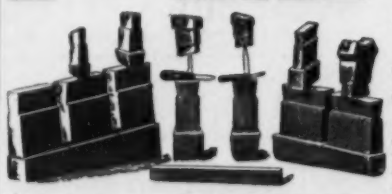

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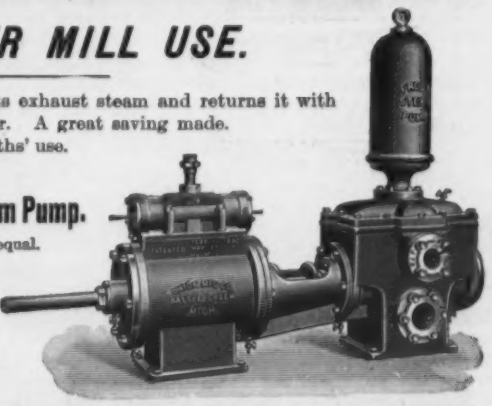

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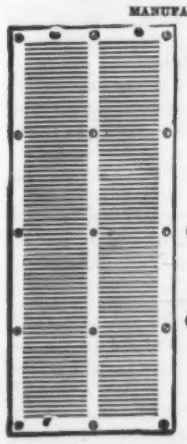

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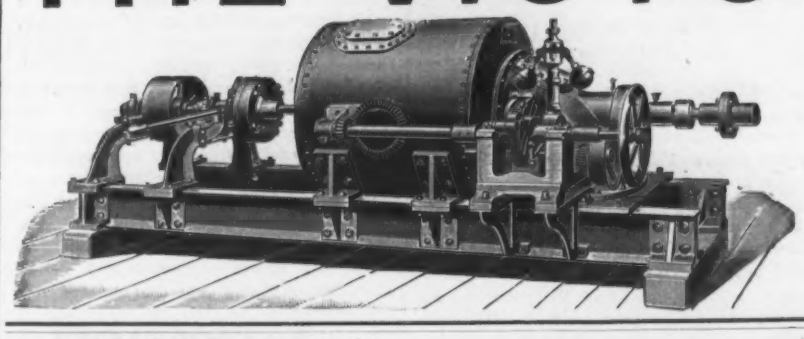

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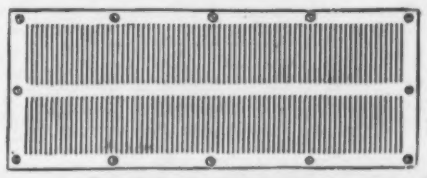

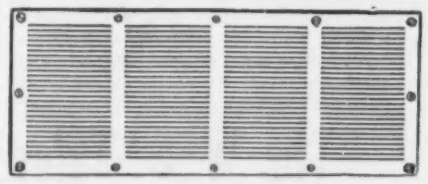

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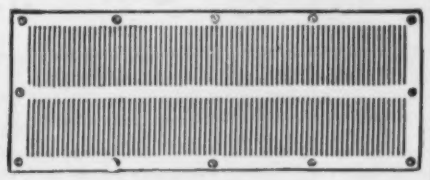

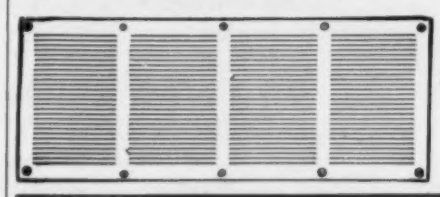

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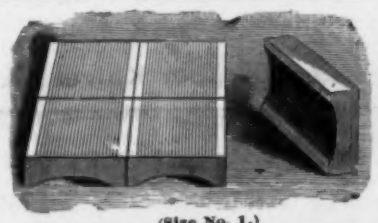

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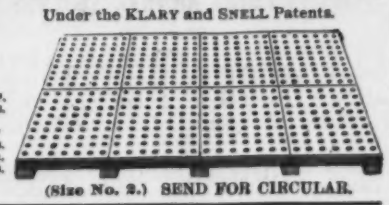

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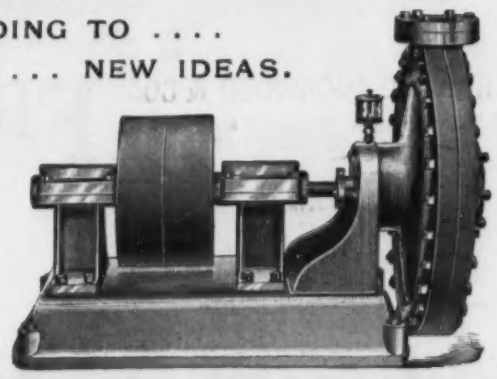

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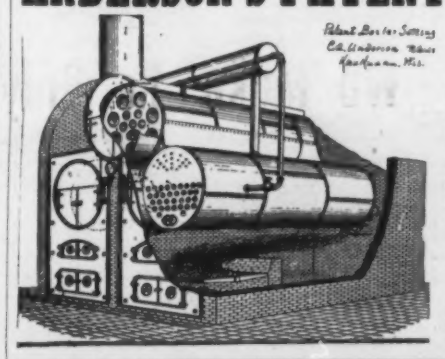

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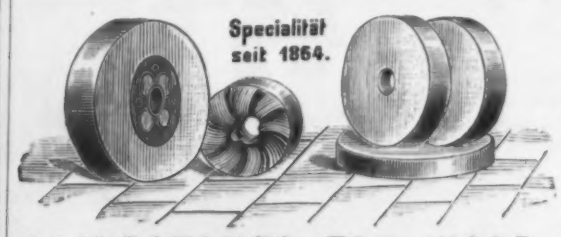
SEND FOR ILLUSTRATED CATALOGUE.

INTERIOR OF PULP MILL FOR THE MANUFACTURING INVESTMENT CO., AT MADISON, ME.

The above illustration is taken direct from a photograph and shows the interior of a Pulp Mill designed and built by us for the Manufacturing Investment Co., at Madison, Me. The photograph is taken in the basement, so as to show the construction of the iron posts and iron girders supporting the floors. The entire framework of the building is made of iron, and the heavy loads of pulp, paper, &c., are carried entirely by these iron posts and girders. The building is enclosed by a light brick wall placed between the iron posts.

OFFICE AND WORKS: EAST BERLIN, CONN.



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Manufacturing News.

EASTERN STATES.

The Stark Paper Company, Morrisville, Vt., has displaced the old boiler in its Paran Creek Mill, and has set up a new and larger one, made at Oil City, Pa.

The new leather board mill at Belfast, Me., has been started up.

The Hollingsworth & Whitney Company, Winslow, Me., will enlarge its mill at a cost of $35.000.

An electric light plant has been installed at the Webster Paper Mill, Orono, Me.

F. W. Bird & Son, East Walpole, Mass., have been putting in some new machinery at their mill and have built a steam engine room.

The American Pad and Paper Company, Holyoke, Mass., has secured a lot 100x125 feet upon which to erect a four story brick building this fall.

A new industry has lately been started at Westbrook, Me.; it is the manufacture of leatherette by a new process. The work is carried on in the building formerly used as a leather board mill, and the enterprise is said to be strongly backed financially.

S. D. Warren & Co. have nearly completed the additions to their mills at Westbrook, Me. The buildings are practically one, being separated only by a thick fire wall, and measure together 200x209 feet. The upper floors will be used as cutter and shipping rooms. It is reported that this company will build another large mill, 145x138 feet.

The question of long service at paper mills is creating much interest. The best records so far are: Stephen Cordwell, foreman of the beating engines, has worked at the mills of S. D. Warren & Co. for forty years, and for four years for Day & Lyon. C. W. Mace, foreman of the cutter room, has worked forty-one years for S. D. Warren & Co., and two years for Day & Lyon, former owners of the present Warren plant.

The Hollingsworth & Whitney Paper Company is adding to its plant in Watertown, Mass., a building of irregular shape, 95x61x70x77, three stories high, and, as far as possible, fireproof. It will be ready for occupancy about November 1. The lower floor will be occupied by the Hollingsworth & Whitney Company, and the others by the Union Bag Company.

MIDDLE STATES.

The contract has been awarded for building a new stone dam at Winchell's Falls, on Esopus Creek, near Brown's Station, Ulster County, N. Y., and work will begin at once. It is for the concern which purchased the pulp mill formerly owned by the Hudson River Manufacturing Company, together with the water power and surrounding property. An electric railway will be run from the works to the railroad at Brown's Station, the electricity to be generated by water power at the dam. The present mill will be rebuilt and enlarged and another will be built next season. The most improved machinery is to be put in.

The Arlington Paper Mills, Salisbury Mills, N. Y., started up on August 26, after being shut down for one week for repairs.

The Goulds Manufacturing Company, Seneca Falls, N. Y., reports the following sales of its triplex power pumps: City of Forest, Ill., one 8x10 inch, for water works; city of Hartford, Wis., one 8x8 inch, for water works; Craig Oil Company, Toledo, Ohio, one 2x6 inch, for pumping oil, and two 5x8 inch pumps for water pumping; Massachusetts Mills, in Georgia, one 8x10 inch pump for a water works plant at Lindale, Ga.; Lunenberg Water Company, Lunenberg, N. S., one 8x10 inch pump to be operated by a water wheel for water works supply; Media, Pa., two 6½x8 inch pumps to be operated by water wheel for waterworks supply; Webster & Meathe, Detroit, Mich., one 1¾x2½ inch pump; Hendricks Manufacturing Company, Limited, Carbondale, Pa., one 6½x8 inch and one 2½x6 inch pump; Plattsburgh Light, Heat and Power Company, Plattsburgh, N. Y., one 1¾x2½ inch pump, to be operated by an electric motor; Otis Falls Pulp Company, Livermore Falls, Me., one 7x8 inch pump for pumping paper stuff; Prof. L. A. Wait, Ithaca, N. Y., one 4x4 inch pump; W. J. Cooper & Cole Brothers, Lincoln, Neb., one 6½x8 inch pump; Mineral Farm Consolidated Mining Company, Aspen, Col., one 6½x8 inch triplex power pump and 5 horse power motor for operating it; the Southworth Company, Mittineaque, Mass., one 5x8 inch pump, with brass base, for pumping paper stuff; Berlin Mills Company, Berlin, N. H., one 7x8 inch pump for pumping paper stuff; Rawitzer & Brothers, Stafford Springs, Conn., one 7x8 inch pump; Church & Co., Trenton, Mich., one 8x10 inch pump for pumping hot liquor; Bagnall & Hilles, Yokohama, Japan, one 5x8 inch pump, to be driven by an electric motor; Jones & Lamson Machine Company, Springfield, N. H., one 3x4 inch pump.

The Columbian Talc Company, Gouverneur, N. Y., has been incorporated. The officers are William R. Candler, president, Detroit, Mich.; Charles H. Little, first vice-president, Detroit, Mich.; William T. Clark, second vice-president and manager, Hailesboro, N. Y.; Earl Bancroft, secretary, Edwards, N. Y.; Charles T. Miller, treasurer, Detroit, Mich. The company controls some very fine talc properties and will manufacture a high grade asbestine pulp for paper makers' use. It expects to be in running order in about three weeks, and will at once become an active competitor for orders. Over 50,000 tons of talc are mined and milled near Gouverneur, N. Y., each year and sold to paper makers. Talc is, moreover, being largely used in the manufacture of boiler and pipe coverings as an important equivalent for asbestos, with which it has a marked chemical affinity, and it is extensively sold to gas works for special uses. It is reported that another company will soon be organized.

One of the grinders in the mill of the Glens Falls Paper Mill Company, Fort Edward, N. Y., got out of order on August 27, and damage was done to the amount of several hundred dollars.

McPherson & Son, of Easton, Pa., have been awarded the contract to build a stack 100 feet high, and to wall in the new boilers at the paper mill of John L. Riegel & Son, Riegelsville, N. J.

The extension track for the mill of the Hudson River Pulp and Paper Company, Palmer's Falls, N. Y., is under construction.

The Union Bag and Paper Company, Sandy Hill, N. Y., is running extra time in order to meet the increasing demand for its goods.

WESTERN STATES.

It is stated that an effort is being made to locate a factory at Tipton, Ind., for the manufacture of articles in the papier maché line.

The Hawkeye Paper Company, Tama, Ia., is improving its mill at an outlay, it is said, of between $15,000 and $20 000.

It is stated that the projected paper mill at St. Cloud, Minn., will cost $150,000.

The Michigan Sulphite Fibre Company, Port Huron, Mich., with head office at Detroit, Mich., is having a heavy demand for its product at the present time. The company owns its own spruce timber tracts in Northern Michigan and Canada, and also has its own barges and docks; this enables the company to get raw material at lowest cost, and of the very best quality, for selected spruce is only used, and under the new management this selection of stock has become apparent in the important advance made in the quality of the fibre turned out and the uniformity and clearness of its output. This company also has strong financial backing.

It is reported that the people of Manistique, Mich., are trying to locate a paper mill in their city.

It is stated that the American Straw Board Company intends to remove its plants from Kenton and Tiffin, Ohio, with a view to combining them at some desirable point, and that Toledo is now being considered as the new location.

SOUTHERN STATES.

It is said that among other things the new pulp mill at Chattanooga, Tenn., will manufacture pipes, napkin rings, flower pots and ornamental door knobs.

General Notes.

The business of the Crawford-Birrell Company, printer, Newark, N. J., has been placed in the hands of a receiver.

Jenkins Brothers, 71 John street, New York, have issued a new price list and illustrated catalogue of their valves, standard packing, &c. This supersedes all other lists.

During the next week or ten days the Crocker Manufacturing Company, Holyoke, Mass., will run on its specialties in canary, light blue, Nile green, robin's egg blue, olive, cherry and terra cotta. Any buyer likely to need any of these colors, especially in odd sizes, soon should let the company know in time to make them with this run.

Train, Smith & Co. have put two new brands of manilla rope on the market. The "Crown" brand is the very finest solid rope which can be packed, and the tags accompanying the goods bear the design of a crown in red with "T. S. & Co." on the left hand side, and blanks for the number of coils and weight. The "Anchor" brand has a similar tag, the crown being substituted by an anchor in red. Both of these designs have been registered here and abroad. The rope has already been tried by a number of mills in the country, and competent judges pronounce it satisfactory in every way, and equal to anything they have heretofore used.

C. T. Bainbridge's Sons, Brooklyn, N. Y.; the Holyoke Card and Paper Company, Springfield, Mass.; the Rhode Island Cardboard Company, Pawtucket, R. I., and J. O. Barr & Co., Philadelphia, Pa., manufacturers of mat boards, have formed a combination on these goods, and the first named concern is the selling agent for the entire output.

Economy of Pipe Coverings.

It is well known to engineers that unprotected steam pipe is a source of considerable loss from condensation of the steam. This loss is constant and in many cases considerable. To some this means only the loss of so much heat, merely that which is radiated from the unprotected pipe. To the engineer, however, it means a lowering of the quality of the steam by increasing the amount of entrained water that is carried in it. The introduction of this water into the engine results in a direct loss of economy in the cylinder of the engine. This water is a source of trouble and loss on every hand. Steem separators will to some degree remove the water, but they are seldom placed between the steam pipe and the engine. The proper position for a steam separator is as near to the engine as possible, but this seemingly obvious rule is seldom followed.

It will be seen, therefore, that not only to avoid the heat loss by radiation, but to avoid the evils of wet steam, it is necessary to cover all the piping with some non-conducting material as a protection. Not long ago it was the rule to see long steam pipes without the least attempt at covering. Now, however, the covered pipes are coming to be the rule rather than the exception.

An idea seems to exist in the minds of some engineers that coverings which are of the best material cost as much, if not more, than they will save in the year's coal bill. We have before us the results of several tests of the value of pipe coverings which show plainly the great saving that may be effected by their use.

In one case results are given for eleven different kinds of pipe covering, with their cost and estimated saving of heat. In none of these eleven cases is the saving for a single year less than three times the cost of the covering. These results should come to the attention of every steam user who thinks that he cannot afford to thoroughly protect his steam pipes.—*Industrial Record.*

Edward Atkinson relates the following incident: I once had submitted to me by the owner of a large establishment a statement that he had protected every part of his risk with an automatic sprinkler except the tail race, and he asked me if I should recommend a sprinkler over the tail race. To which I replied that had the danger of fire in a tail race once been anticipated, and had a sprinkler been placed there, we might have been saved a very considerable loss from the floating of burning oil into the race from the river after the wheel had stopped.

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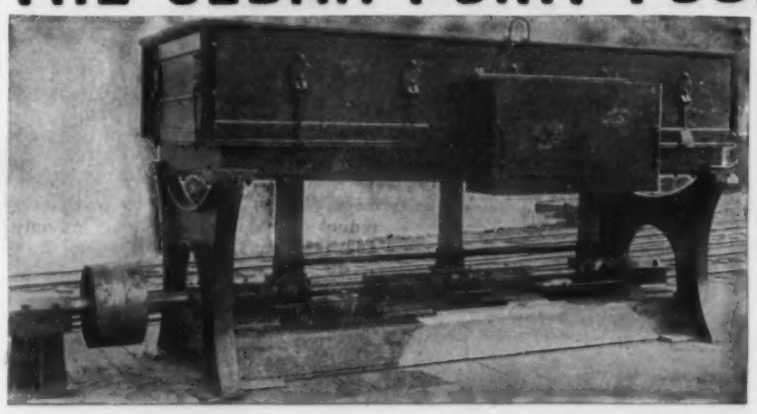

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Legal Decisions.

[SPECIALLY REPORTED FOR THE PAPER TRADE JOURNAL.]

Riparian Rights.—The Supreme Court of Pennsylvania holds that a lower riparian owner is not required to be in possession of his lands in order to maintain trespass against an upper owner to recover damages for diverting the waters of the stream.—*Hogg v. Connellsville Water Company, 31 At. Rep. 1010 (40).*

Assumption of Risk.—The mere fact that an employee, continuing his work under a promise that a defect in the machinery shall be repaired, knows that it has not been repaired, does not impose upon him the risk of an injury arising from the defect.—*Texas and N. O. R. Co. v. Bingle (Court of Civil Appeals of Texas), 29 S. W. Rep. 674 (45).*

Liability in Use of Dangerous Machinery.—Where the negligence complained of is the failure of the master to properly instruct an inexperienced servant as to the use of a dangerous machine, and it is shown that proper instructions were not given, that the servant was without experience, that the master knew of the dangerous character of the machine, and that the dangers were apparent only to an experienced man, the rule that the servant assumed the risks incident to the employment does not apply.—*American Straw Board Company v. Foust (Appellate Court of Indiana), 39 N. E. Rep. 891 (84).*

Expert Evidence.—In an action by an employee for injuries caused by the breaking of a saw, it was not error to permit expert witnesses, who were familiar with such saws and had large experience in their use, to testify that in their judgment such saw was suitable and safe for use.—*Lau v. Fletcher (Supreme Court of Michigan), 62 N. W. Rep. 357 (52).*

Liability Under Contract of Service.—Where, under a contract for personal service, the wages are payable in instalments, and, before the term of service expires, the master dismisses the servant without his fault, and the wages are paid up to the time of dismissal, it was held the liability of the master to the servant is not an absolute liability for wages for constructive service during the balance of the term, but a contingent liability of indemnity for loss of wages. This liability accrues by instalments on successive contingencies, each of which consists in the failure of the servant without his fault to earn, during an instalment period, the amount of wages which he would have earned had the contract been performed, and the deficiency is the measure of damages. The original breach is not total, but the failure to pay the successive instalments constitutes successive breaches, and successive actions may be maintained for the recovery of the instalments of damages as they may accrue, if any. This is the rule of damages usually allowed under the fiction of constructive service, but that fiction is rejected as false and inconsistent with that rule, while the rule itself is retained. It does not follow because of this that the discharged servant cannot, if he so elect, consider the breach total, bring an action for all his damages and recover all accruing up to the time of the trial; but it is held that prospective damages beyond the time of trial are too contingent and uncertain to be allowed.—*McMullen v. Dickinson Company (Supreme Court of Minnesota), 62 N. W. Rep. 121 (253).*

Liability for Injury to Employee.—An employee of a machine company was injured while operating a defective lathe. It was shown that employees were not permitted to repair their own machines; that the employee had called the company's attention to the defect in this lathe, and, relying on the promise of the company to have it repaired, had continued to operate it for several weeks and until the injury occurred. There was evidence that the employee at the time of the injury was using reasonable care. It was held that he was entitled to recover for the injuries sustained.—*Ferriss v. Berlin Machine Works (Supreme Court of Wisconsin), 63 N. W. Rep. 234 (102).*

Damages for Fraud.—Where a person acting as agent for another contracted to sell an engine of a certain kind, and knowingly delivered an inferior one, the purchaser may retain the engine and sue both principal and agent for damages.—*Alpha Mills v. Watertown Steam Engine Company (Supreme Court of North Carolina), 21 S. E. Rep. 917 (43).*

Accounting for Property on Termination of Partnership.—Where two parties entered into an agreement to conduct a certain business one year, one to be the "sole proprietor and owner" and the other to receive half of the net profits as compensation for his services in carrying on the business, on an accounting between the parties at the expiration of the contract the Supreme Court of New York, Fifth Department, held that it was competent in estimating the gains to charge to the business the cost of the materials consumed and the depreciation of the property purchased to use in the business.—*Danolds v. Lord, 31 N. Y. S. Rep. 915 (103).*

Right to Preliminary Injunction.—Where long acquiescence in a patent has been shown and infringement is clear, complainant's right to a preliminary injunction is not taken away by the fact that he has to some extent issued licenses for the use of the invention when it appears that he has made it his business to personally superintend the construction of the device where licenses were not issued.—*Kennedy v. Penn Iron and Coal Company (Circuit Court, N. D. Ohio, E. D.), 67 Fed. Rep. 339 (67).*

Taking Care of the Engine.

In keeping engines bright, as in most other lines of effort, prevention is cheaper and better than cure. It is surprising how much labor may be saved by care in keeping the heated surfaces from contact with what would have a tendency to dim their lustre. A little oil on the waste used in wiping, the habit on the part of the engineer or his visitors of leaning up against the cylinder heads and of laying tools on the horizontal pieces when working around them, even the desire which some people have to feel if they are hot, acts small in themselves and no one of which may make much of a spot, taken altogether make no inconsiderable amount of scouring necessary on the part of the engineer. Care on his part never to touch the bright part of his engine with greasy hands or waste, using a hand broom or feather duster to clear the dust off the heated portion instead of using waste, which even in its best state is likely to be a little gummy, and a strict enforcement of the rule "hands off" on everyone who enters the engine room, will very materially lighten his labor in keeping his engine ship-shape.

When necessary to polish up I have generally found it best to scour well with whatever compound I had at hand, and after wiping off with a piece of clean waste, let it stand for twenty-four or forty-eight hours; then wipe again and rub off with some dry polish, as plumbago, whiting, pulverized bath brick, or some of the patented novelties. The dry gloss thus secured will keep bright much longer than when the surface is finished up at once, as there always seems to be a little greasy substance which comes out on the surface, which has a tendency to catch dust and dirt. By letting it have time to come out and be wiped off, it is entirely got rid of, and the surface will stay bright for a long time, if the dust is brushed off instead of wiped. When brass work has a good gloss on it, it will be found to retain it much longer if treated in the same way.—*Power.*

A Suggestion for Mill Construction.

H. G. Morse, president of the Edge Moor Bridge Works, has made the following valuable suggestion to the Manufacturers' Mutual Fire Insurance Company for the protection of roofs from fire:

"It is reasonable to expect that the very rapid expansion of the air by heating would create a draft in a longitudinal direction under the apex of a roof, and thus carry fire with it very rapidly to the ends of a long building. I have for the last year discussed this question from time to time with our officers with the view of putting partitions in our roof down as low as the lower cord, and spaced from 75 feet to 100 feet apart, depending on the length of the roof truss. The object of this is to form a reservoir for the expanded air and to confine the fire and heated air within narrow limits, until sufficient time has elapsed to bring the fire department into action, and when it is brought into action to have the fire so concentrated that effective work can be done.

"A properly built plank partition would, I believe, hold any ordinary fire within confined limits ample time to enable the fire department to get to work. The action of fire walls in a long roof would be somewhat similar to the effect produced by a series of dams placed one after another in a stream having a rapid fall. In case of the breakage of the upper dam, the second pond would have to be filled before any water could run into the third, and the same process would follow on to the last dam. You can readily understand that this would retard the flow of the stream. If, however, a sudden waterspout occurred, or dam broke at head of such a stream and no intervening dams existed, the stream would rush rapidly down and work great destruction before anything could be done to save property. A small model, say 6x30 feet, constructed with wooden fire walls, would very soon demonstrate the principles which I have mentioned."

Weight of Shafting.

A foreign engineer, in considering methods of saving power in the operation of a plant, calls attention to the need of reducing the weight of the pulleys and shafting of many establishments. Improvements have been made in the power produced, but this is much less true of the machinery it propels. It would not seem so if we were allowed to judge by the kind and arrangement of machinery found in many of the various kinds of industrial establishments situated in every manufacturing community. Too much material is too often put in running machines, in shafting, pulleys, wheels, &c.

It is, however, an exceptional and noticeable fact that pulleys of all descriptions have in the past few years been greatly lightened, but for an entirely different reason. Pulleys are figured upon and sold by the piece, and are made lighter than formerly, to reduce the cost of making them, and not to save power by reducing frictional resistance. The change, without reference to cause, serves both purposes, and the users of many pulleys have occasion to be thankful that they are no longer obliged to waste power in propelling useless weight in pulleys, as was formerly the case.

There is no attempt at denying the fact that for a generation or more the best mechanical engineers have recognized the importance of reducing the weight of running machinery for the purpose of reducing frictional resistance and saving power. But it is also true that many, if not all, of the same engineers have been hampered in their undertakings by placing a false construction upon the laws of friction. Some mechanical sage of "ye olden time," without due thought and consideration, declared that friction was independent of surface of velocity, or at least it has been so incorporated in every mechanical text book from then until now, and every mechanical engineer has it by heart. The power to overcome friction is wholly dependent upon surface and velocity, and especially is that true of bodies revolving on axis.

For some singular reason, considering the other errors committed, it was discovered and admitted in those early days that friction was dependent upon weight, and that frictional resistance was increased in exact ratio to increase in weight; and those depending upon the text books have that by heart also, and in that they are right, while being wrong in the other. Those best informed have made some effort to save power by reducing weight, but in this a part only of the contemplated benefits has been secured, because of the errors spoken of.

As an instance of this, hollow shafting was a few years ago designed to take the place of the heavy solid shafting then so much in use. The supposition was that if a 4 inch shaft by making it hollow could be reduced to the same weight as a 2 inch shaft, then it would require no more power to revolve it, and hence a saving of about 400 per cent. in frictional resistance on the part of the naked shaft, and a corresponding saving in power to revolve it. It is true that such a change would result in a reduction of frictional resistance, but not so much as calculated upon.

To state it plainly, a hollow shaft, 4 inches in diameter, of the same weight as a solid 2 inch shaft, would require just twice the power to revolve it at a given speed as would be required for the 2 inches at the same speed. And again, it would require eight times as much power to revolve a solid 4 inch shaft as it does a solid 2 inch shaft, both making the same number of revolutions in the same time, although the former is four times heavier than the latter.

To make of this question a general proposition, it can be stated that the frictional resistance of revolving shafts, all other conditions being equal, is as the cubes of their diameters. Thus, for instance, if 1 horse power should be required to revolve a given 2 inch shaft 100 times per minute, it would require 8 horse power to revolve a 4 inch shaft of same length at same speed in same time. For an 8 inch shaft 64 horse power would be required, and for a 16 inch shaft 512 horse power. This extreme view of the case is presented so that the reader may the more readily comprehend the problem and be prepared to solve it in practice.

If weight alone were the only factor in determining the frictional resistance of revolving shafting or cylinders of any kind, then a 16 inch shaft would require just 64 horse power to revolve it as against 1 for the 2 inch shaft; but, as stated, it requires 512 horse power instead, a difference that would seem more astonishing to those who have never given the matter any reflection; but it is no more astonishing than true, nevertheless.

After a careful study of this object lesson most practical men that are brought in daily contact with such problems can quickly see the need of much improvement in this matter. They can readily perceive that in hundreds of industrial establishments much power is wasted in driving numerous lines of unnecessarily heavy shafting. The shafts have been made heavy to insure against breakage, and the matter of safety has been overdone—as a rule they are much stronger than is required. But did anyone ever hear of a light shaft breaking? The shafts that break off are always heavy, and usually become too heavy and non-elastic—too rigid. A shaft that is elastic has some spring to it, and never breaks unless structurally defective; and many a broken shaft might have been saved if it had been lighter and more elastic. Right here lies the solution to the problem. All shafting should be made of the best and most elastic iron, and then it should be light in proportion. If the iron in a shaft possesses life and elasticity, as it should, comparatively light shafts would, with the greatest ease and safety, do the work now being done by thousands of heavy shafts in every manufacturing locality, and thus save thousands of horse power of now wasted force that could be applied to useful work.—*Scientific Machinist.*

COAL HANDLING MACHINERY.

Joints in Leather Belts.

The importance of suitable cements for making joints in leather driving belts has led the Society of Chemical Industry to indorse the following formula: First, equal parts of good hide glue and American isinglass, softened in water for ten hours, then boiled with pure tannin until the whole mass is sticky; the surface of the joint is to be roughened and the cement applied hot; second, 1 kilogram of finely shredded gutta percha digested over a water bath with 10 kilograms of benzol until quite dissolved, when 2 kilograms of linseed oil varnish are stirred in; third, 1½ kilograms of finely shredded india rubber are completely dissolved in 10 kilograms of carbon bisulphide by heating, and while hot 1 kilogram of shellac and 1 of turpentine are added, and the solution heated until the latter two ingredients are also dissolved; fourth, 1 kilogram of best glue is dissolved at a moderate heat in 1½ kilograms of water, and thickened to the consistency of syrup. One hundred grams of thick turpentine and 5 grains of carbolic acid are carefully stirred in while hot; the mixture to be poured into flat tin pans and allowed to cool, then cut into pieces and dried in the air. The cement is made liquid with a little vinegar, and applied to the joint with a brush; this being done, the two ends of the joint are properly placed together and thoroughly pressed between two iron plates heated to a temperature of about 86° Fahr.

Jeffrey Coal Handling Machinery.

The general application of labor saving appliances to power plants is becoming more general every day, especially so in power plant stations of street railway companies.

An illustration is given of coal handling machinery, recently erected by the Jeffrey Manufacturing Company in the new and elegantly equipped power station of the Columbus Central Street Railroad Company at Columbus, Ohio. The power station is one of the finest of its kind, not only from an architectural standpoint, but also in its mechanical equipment. The Jeffrey Manufacturing Company, to which THE JOURNAL is indebted for this illustration, designed the coal handling machinery for this plant The coal, which is usually nut, slack or pea, is brought in ordinary railroad cars upon the side track immediately adjoining the power house. The coal is then discharged into a large V-shaped hopper of a size to admit the storage of ten carloads; from this hopper the coal is taken by a Jeffrey conveyor, thence under the roadway, a distance of about 100 feet, and is discharged into a Jeffrey bucket elevator inside of the power house. It is then elevated to a height of 35 feet, and is discharged into another Jeffrey conveyor located upon the top of the storage hoppers.

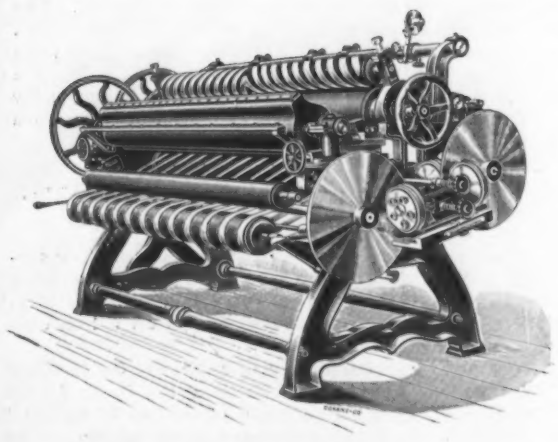
The coal hoppers are connected with the automatic stokers by specially arranged spouts, and by means of valves and levers which are controlled by the man in charge. The coal is fed into the stokers as may be required. The coal hoppers are built of heavy sheet steel supported by wrought iron pillars. A small stationary engine drives this coal handling machinery, while the whole plant is of a capacity of more than double the present requirements of the power plant, which is now equipped with boiler capacity of 1,500 horse power. This machinery is applicable to all kinds of power, and is not therefore limited to street railway power stations. A descriptive catalogue, relating to this class of machinery, can be had by addressing the Jeffrey Manufacturing Company, at Columbus, New York or Chicago.

Do not buy an oil tank which has a faucet on the side near the bottom, for sooner or later some employee will leave it open and the oil will be on the floor in the morning. Get one with a good pump to raise the oil in your can, and be on the safe side.

It is a good idea to have ash pits made water tight with cement, so that they may be kept partially full of water, and so protect the grate bars from the heat that might otherwise be generated by ashes and clinker in the pits.

Do not try to break malleable iron fittings by blows with a hammer when you want to take down a line of pipe, for they are not so brittle as cast iron, and you may fail to break them, and yet distort them so that they cannot be removed easily.

When you are piping up your injector, arrange it so that it can take water from the street mains under pressure, or from a tank. If the street main pressure varies much, you may find this arrangement very convenient.



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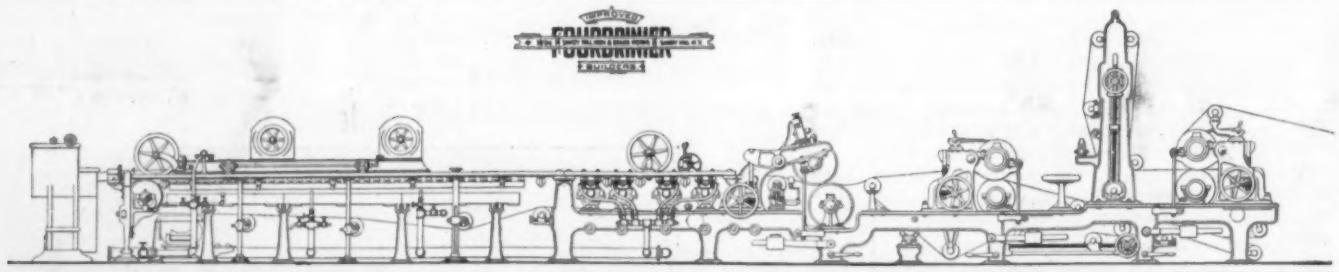

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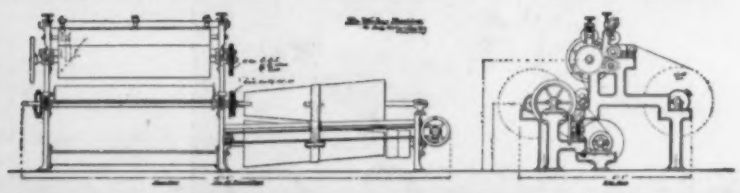

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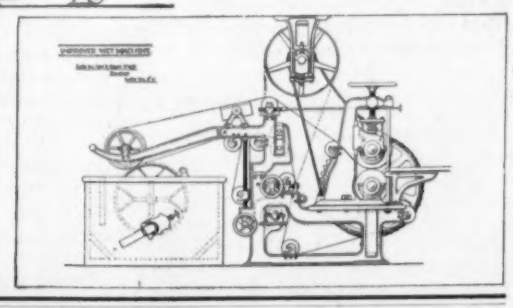

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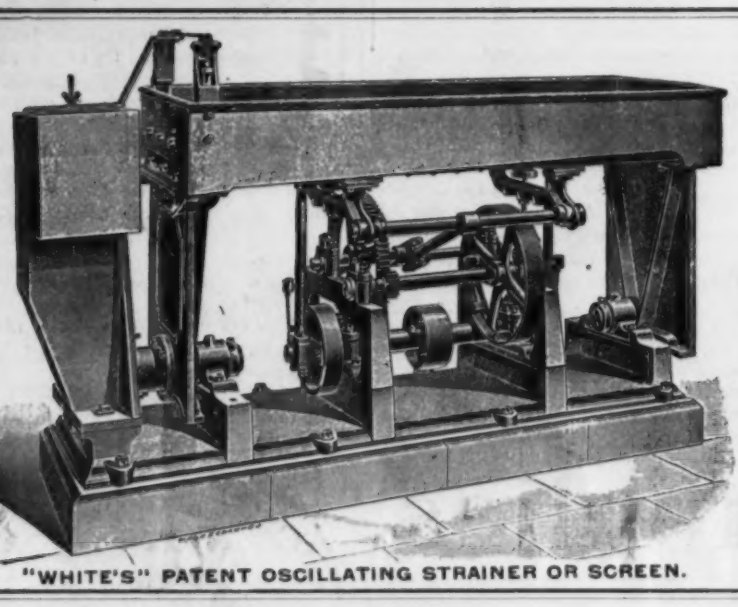

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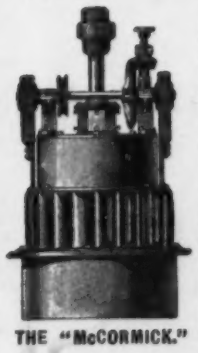

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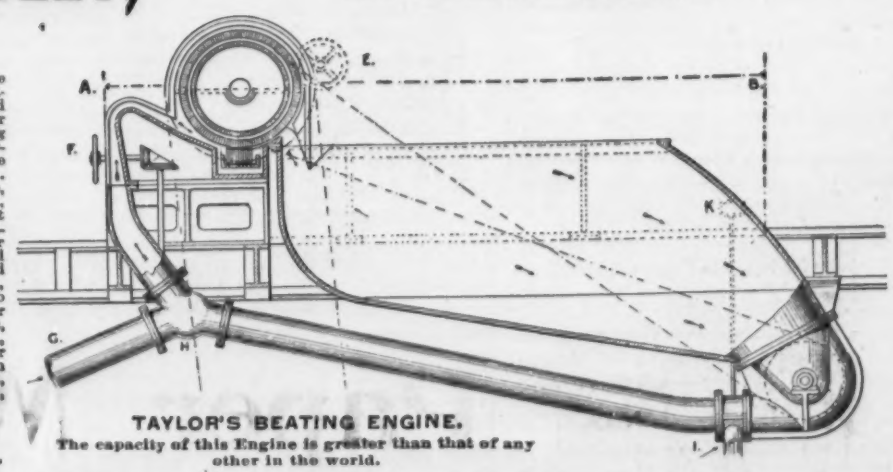

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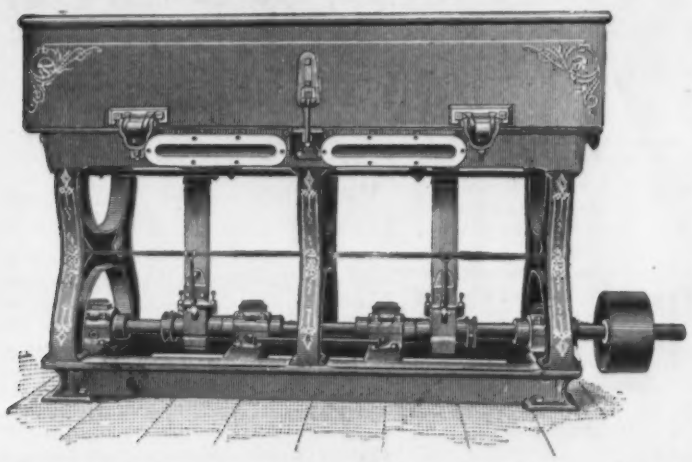

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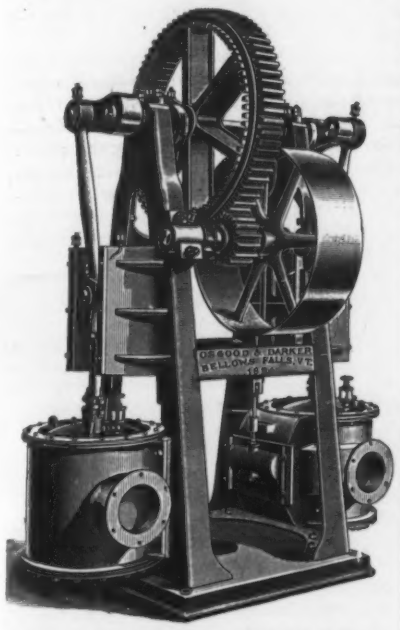

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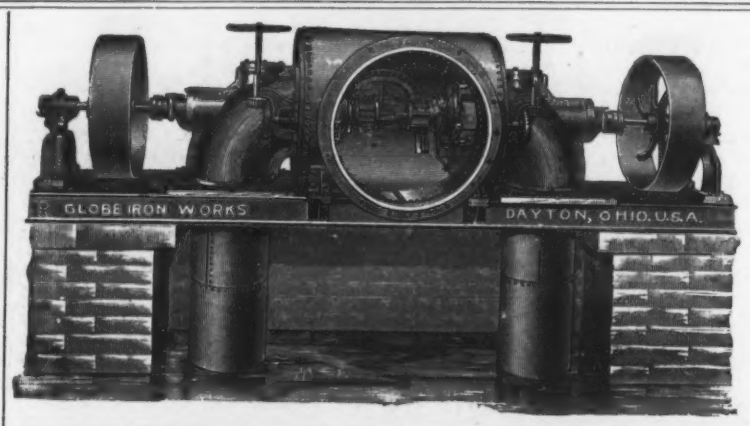

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Whole Gate,	16.06	119.17	141.58	205.27	79.76
¾ "	16.42	122.00	127.18	195.19	82.58
½ "	16.78	117.33	112.60	175.74	82.18
¼ "	17.03	111.33	98.12	149.99	79.31
⅛ "	16.88	118.67	83.07	118.40	75.52

TEST OF A 42 INCH WHEEL—JULY 14, 1894.

	Head.	Rev. per Min.	Cu. Ft. per Sec.	Horse Power.	Per Cent.
Whole Gate,	16.33	128.00	134.18	199.56	80.50
¾ "	16.56	134.80	120.85	188.14	83.09
½ "	16.59	129.33	104.85	162.89	82.77
¼ "	17.13	125.25	92.76	142.40	79.21
⅛ "	17.48	121.00	70.80	98.85	70.60

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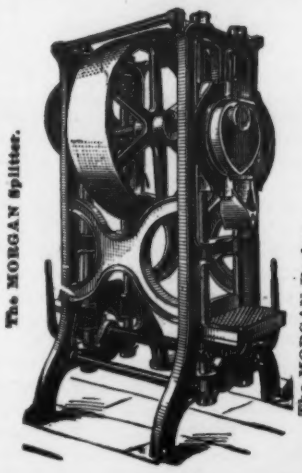

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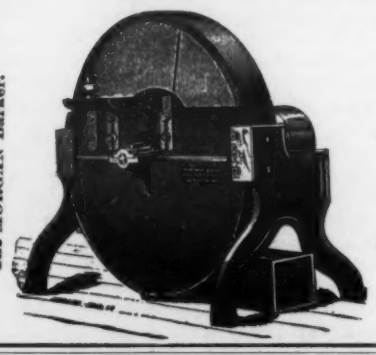

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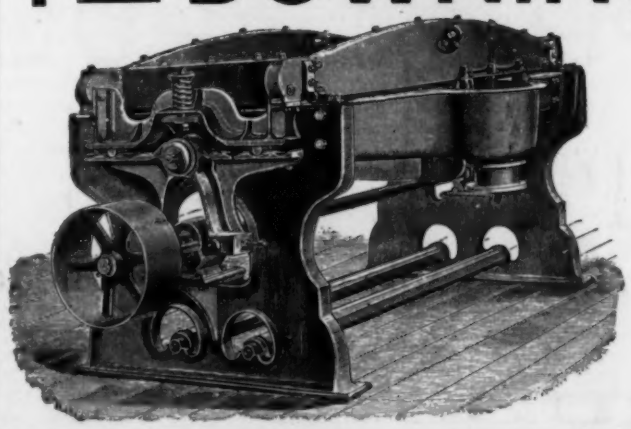

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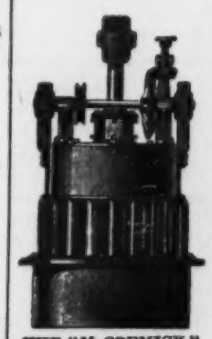

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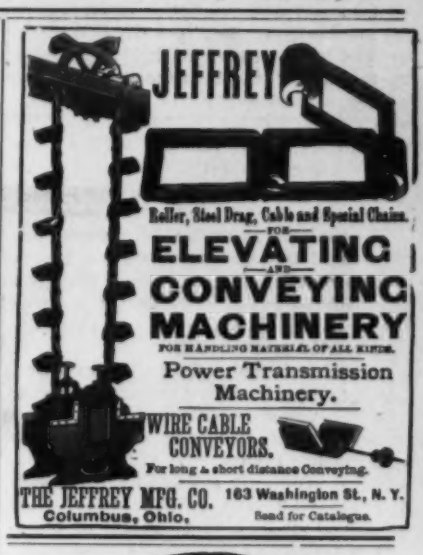

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Rustless Coatings for Iron and Steel.*

By M. P. Wood.

This is the third paper upon rustless coatings for iron and steel presented to the society by Mr. Wood, who promises a fourth article on the liquid medium that enters into the composition of all paints, anti-corrosive or otherwise. In the present paper the author defines the essentials of a good paint, for whatever use intended, as--

First—That it shall adhere firmly to the surface over which it is spread and not chip or peel off. It must be non-corrosive to the material it is used to protect as well as to itself under long periods of atmospheric exposure and chemical changes. It must form a surface hard enough to resist frictional influences, yet elastic enough to conform to all changes of temperature, or with a coefficient of elasticity approximately as near the material it covers as possible. It must be impervious to and unaffected by moisture and atmospheric and other influences to which the structure may be exposed.

Second—That it shall work properly during its application, a property that depends largely upon the relative amount of pigment and liquid; the nature of both pigment and liquid also have influences that govern results.

Third—That it shall dry with sufficient rapidity. This function depends mostly upon the vehicle or liquid used with the pigment, though the pigment has in many cases an influence, as will be seen further on.

Fourth—That it shall have proper durability, which is a function both of the pigment and liquid. And as the question of cost is in many cases the governing factor in the selection of a paint, the question of durability may be regarded as the most important one of the list; though it can be imagined that a paint can be durable per se, and not be protective in the strict sense of the word, as can be illustrated in the case of a good paint applied to the surface of a sheet of iron coated with rust; the liquid element in the paint will not absorb or neutralize the corrosion which it covers, but will dry regardless of it, and permit the construction of the metal to progress beneath its coat.

Fifth—Covering power, by which is meant the power of a pigment to so cover the surface to which it may be applied that its protection from decay is not only assured, but that the minimum amount of paint shall effect this purpose.

The covering power is also used to express the power of a pigment to protect the oil from decay, in which case a large amount of pigment and a small amount of oil are used; this description of paint drying more or less "flat," the pigment being exposed to the weather and held in place by the thin film of oil. It is thought by many master painters that this is the most durable and best paint for general use. On the contrary, paints that dry with a gloss have a large amount of oil and a small amount of pigment, in which case the oil covers and protects the pigment.

The covering power is also commonly expressed in the amount of surface that a given weight of paint will cover. A good iron oxide paint will cover nearly twice as much surface as white lead or red lead. The specific gravity of the paint also is to be considered in the definition of this power. The lightest paints have the most covering power. White lead is about 6.4 times as heavy as water; iron oxide, 5 times; yellow ochre, 3½ to 4 times, &c. With this variation it is manifestly almost an impossibility to get the same number of particles of the same size out of the same weight of different materials.

There is no exception to the rule that the finer the state of division to which any pigment is reduced the better will be its covering power. An ounce of lamp black, because of the minuteness of its particles, will cover more surface in an effectively protective manner than any known pigment, and 1 part lamp black and 9 parts suphate of lime by weight give most excellent results in covering power. Prussian blue, the scarlets, lakes and others of what can be called "the fugitive colors," on account of their tendency to fade out, possess the light dispersing power which deceives the eye as to their covering faculty, when in reality for actual covering as protective substances they are absolutely worthless. These colors should be denominated stains rather than paints; and generally the only measure of protection from decay or corrosion that accompanies their use is solely from the oil or liquid with which the color is mixed.

The question naturally arises: Is it necessary for a pigment to be pure and unmixed with inert substances, or can a certain amount of these be mixed with the pigment without detriment to it? Experiments of long continuation lead to the conclusion that the oxides of iron, lead, manganese and other strong pigments can be mixed with large amounts of these inert substances without detriment, and generally to the manifest improvement of the paint as a protective agent on many structures, notably wooden or composite ones. A single illustration will suffice to make this apparent. Oxide of iron is one of the strongest of pigments in covering power. If 1 ounce of this pigment be spread in two coats over a given surface, say 2 square feet, so that the surface be completely hidden, and the job be declared a satisfactory one so far as covering power is concerned, and in the second case 1 ounce of the same oxide of iron be mixed with 3 ounces of barytes, kaolin, gypsum, &c., or any one of them, and this paint be spread over 2 square feet of surface as before, it is obvious that the amount of color per unit of surface will be the same in both cases; but in one case there is four times as much pigment as in the other, and in the second case three-fourths of the paint would he inert material. For railway cars and wooden structures the durability of these paints would be in favor of the second case, as well as the cost of the paint. The pigment in this case is the life of the paint and protects the oil from the decay incident to oxidation from the atmospheric exposure.

Oxide of iron is practically unchanged after centuries of exposure. It induces and promotes oxidation in all organic substances with which it is brought into contact, as well as in nearly all metallic bodies. In an oxide of iron paint it is the oil that decomposes (being the organic matter), the decomposition due to the exposure of the elements being aided by the oxidizing power of the oxide of iron pigment mixed with the oil. This statement holds true only where there has been no chemical change or combination between the pigment and the liquid.

Whiting, sulphate of lime, barytes, kaolin, silica, feldspar and talc are the principal inert substances used in pigments. Whiting, gypsum and barytes are the best of the list; the others, grinding greasy, or hard to grind, or of a nature readily decomposed by water, are objectionable. Barytes, from its great weight, is objectionable only when bought by the pound in a dry state, or as a paste or prepared paint in which as an adulterant it takes the place of pure material. The sulphate of lime is no doubt the best of the inert substances to mix with any pigment, all things considered. It should be thoroughly hydrated. As high as 45 per cent. by weight of this substance can be mixed with 50 per cent. of sesquioxide of iron for a pigment. As most of the oxide of iron paints are made by ignition of copperas, and a small amount of sulphuric acid is sometimes left in the oxide that the heat has failed to drive off, from 2 to 5 per cent. of carbonate of lime is added to neutralize the free acid, changing it to sulphate of lime. In this case of proportions the pigment really consists of 50 per cent. of oxide of iron and 50 per cent. of inert material, all by weight. Any oxide of iron paint that contains hydrated oxide or free SO_3 will deteriorate rapidly by oxidizing the liquids, while any free SO_3 will retard the drying of the paint.

A good paint prepared for spreading in ordinary temperatures upon wooden or composite structures has the ratio of about one-third pigment and two-thirds oil or liquid. The practice upon one of the leading railways of the United States, where the materials purchased for paints amount to over $300,000 yearly, is to allow 75 per cent. of pigment and 25 per cent. of oil for the paints applied to cars and wooden structures.

Experiments determine that the most durable paints are those that contain a large amount of pigment per unit of surface, and that pigment is the best that is strong enough of itself, or with a proper proportion of inert material, to allow liquid enough to be added to it to flow and work well with the brush when applied.

The destruction of paint may be from eight causes: First, mechanical injury; second, the action of deleterious gases; third, chemical action between the pigment and the vehicle or liquid; fourth, chemical action between the body covered and the paint, either the pigment or the liquid; fifth, the action of light; sixth, peeling; seventh, destruction by cleaning; eighth, water.

Many master painters and manufacturers claim that the destruction caused by cleaning and the action of water are the worst of the above causes. This is true so far as paint applied to wooden structures is concerned, and has no relation to the causes that effect the destruction of paint applied to iron or steel structures. The paper then deals somewhat at length upon these subjects.

With proper care in their preparation to eliminate the ammonia and organic matter subject to decomposition and the formation of corrosive acids, and when applied hot to clean, dry surfaces, free from mill scale and warmed to any degree under that of boiling water, they are not only cheap in cost, but seldom need renewal, and form one of the best of protective coatings to resist not only corrosion but decay in all bodies, ferric or other, and prevent, in a great measure, the passage of moisture and the familiar sweating of objects at sudden changes of temperature. Enameled articles and the japan varnishes have as their base asphalt tempered with some admixture of linseed oil and varnish gums. Some are dried by baking in ovens, forming enameled ware; others, applied with a brush, dry by evaporation of their solvents rather than by oxidation.

The persistency with which the iron oxide paint manufacturers push their claims for the recognition of their product as the only great preservative compound of the day for all surfaces, metallic as well as those of wood or mineral, and the readiness of some engineers to accept their claims without investigation, notwithstanding the many instances that these paints present of their failure as anti-corrosive compounds, necessarily requires me to illustrate some facts relative to their use not otherwise noticeable.

Scores of important iron structures have been coated with these paints under the best conditions of application, the non-protective character of these compounds being painfully apparent to any person who has examined the Victoria tubular bridge over the St. Lawrence River at Montreal; the trusses and lattice ironwork of the Brooklyn Bridge; the elevated railway structure of New York city, notably that important portion, completed within the last few years, that carries the Washington Heights and Macomb's Dam roadway over the 159th street elevated railway station, where the combined effects of mill scale, iron oxide paint, sea air, steam and the products of combustion from the many locomotives daily passing under the viaduct afford as prominent an example of engineering blundering as the present decade has thus far developed.

So rapidly has corrosion in the latter case developed that it is safe to assume that this important structure will succumb to its effects within twenty-five years from the date of its erection, unless some more drastic remedy is applied to check it than the dabbling of a paint brush dipped in a 60 cents per gallon paint.

Other equally prominent examples of the injurious effect on ferric structures of the use of these iron oxide paints could be cited if needed to warn engineers against their further use as protective coatings.

White lead, when pure and carefully ground with pure oil, without drier, and allowed to take its time to dry thoroughly before another or the second coat is applied, forms a very effective coating to prevent decay in wooden structures or corrosion in iron. The pigment being held to the surface coated by its combination with the liquid, the oxidation of the oil from atmospheric exposure leaves the pigment free to come away as a fine powder; and in cases where the paint has been exposed for a long period without being dressed with a coat of oil the pigment will be found to be quite easily removed by passing the hand over it.

When protected from the direct action of the elements and the sun, as on the under side of cornices, &c., the paint will be found hard and resistant after the lapse of many years. Its color readily shows the progress of any decay or corrosion beneath it, and this virtue alone causes its rejection as a protective coating, even if the cost of it was of no consideration.

Many instances of its effectiveness as applied to iron to prevent corrosion can be cited. One of them, from the prominence of the circumstances, is here given: The iron material in the old Hammersmith Bridge across the Thames at London, England, was bought to use as false work at the new Forth Bridge, Scotland. The iron, after sixty-two years of service, was as good as new. Many of the parts were inaccessible, and had not been repainted since their erection. Pure white lead paint was what had preserved them.

Lighthouses, beacons and signal stations at numerous points on the coast in all parts of the world show, even in their exposed positions, the protective power of good white lead paint. A condition precedent to its application should be the removal of all scale and grease, an absolutely dry and clean surface and a clear, bright atmospheric condition during the drying.

The use of red lead as a pigment is possibly of earlier origin than any of the oxides of iron, ochres and other substances, natural or artificial, of which we have any record, unless it be asphaltum or lamp black. The many miscellaneous pigments that have come forward, been tried and found wanting in some one or other of the qualities that constitute a good paint are almost numberless. There is no other color pigment whose use as a protecctive covering to wood, brick, stone or metal has been so uniformly satisfactory and successful as red lead, and any failure to fulfill its mission can be traced directly to some agency foreign to the lead itself, used either in its preparation or in the methods of its application.

Carbon as an elementary substance remains unchanged through all the centuries, and when combined to a greater or less extent with organic matter subject to decay it asserts its rights as a preservative agent and insures a long life to any substance with which it is compounded or placed in contact.

The bricks that formed the hanging gardens and walls of Babylon and other cities of the plains thousands of years ago were bonded by natural bitumen or asphaltum, the thin layers and coatings of which are found to-day, unchanged, in vast quantities, in the soil, while the brick and stone that they bonded have perished.

There is trustworthy evidence that the Egyptians and earlier races of mankind understood the art of preparing this natural product so that it could be applied cold with a brush as a paint instead of as a coating applied with a trowel or mop. What the liquid or vehicle was that was mixed with the bitumen when it was used as a paint there is no evidence other than the assumption that it was linseed oil, as the use of linen for garments was universal, and of oil for food, the latter being made from olives and other vegetable products by placing them in a bag and subjecting them to pressure by piling stones upon it.

It is the writer's opinion that the future water proof anti-corrosive paint will be made from asphalt oils as the medium combining some of the carbon group of pigments, and that the drying qualities will be had by using some of the strong metallic salts, peroxide of manganese, umber, dioxide of manganese ore, red lead or litharge, all of which are available agents to aid in oxidizing the oil, and it is possible that some of the oxidizing or corrosive energy of the iron oxide group may be utilized to act as a drier, and when this point has been reached become a passive agent instead of a corrosive one to the paint and the metal which it covers.

There are a number of paints upon the market extensively advertised as asphaltum paints, or under other fanciful trademark names. The principal merit of some of these consists more in the name than the quality of the paint.

It is the writer's opinion, based upon an examination of many of these paints, that there is not as much as 5 per cent. of asphaltum in the composition of any brand of such paint upon the market. Even with this small amount, and with the best of boiled or raw linseed oil as the vehicle for the pigment, the paint is difficult to dry without the use of strong metallic salts mixed with the oil to aid its oxidizing or drying quality, and if a quick drying paint is wanted these oxidizing materials are added in such amounts as to materially affect the life of the paint.

When the color of the paint is other than black or steely gray it may be doubted if any asphalt will be found present under the closest analysis, and the red and brown colored samples will be found to rely almost wholly upon some oxide of iron as the base of the pigment, under whatever name it may be masked.

Smokestacks painted with superior graphite paint have been heated to redness without blistering. Sheet tin coated with these paints can be twisted and bent in all directions without scaling or cracking the paint. Some samples of the boiler tubes coated with these paints, showing the power to resist the formation of scale, have now been in use for some two years and are submitted for inspection.

*Abstract of paper read at the Detroit meeting of the American Society of Mechanical Engineers, June, 1895.

About Chimneys.

The chimney has two distinct missions to fulfill: (1) To act as a means of inducing a sufficient amount of air to come to the fire grates to bring about the combustion of fuel; and (2) to carry away the fumes, noxious vapors and smoke, so that they may not be a nuisance to the neighborhood. Which of these two matters should receive the first consideration will all depend upon the peculiarities of the situation. In a strictly manufacturing district the chimney's capacity for economical work must be considered, but in a town or suburban residential district height must be provided, even at the sacrifice of economy.

In laying down a new installation of steam boilers one of the first considerations must be the chimney. It must be constructed so as to bring the requisite amount of oxygen to support combustion, without being too large for its work—a mistake often made. It should be carefully designed, even to the coping on top, as even this, when badly designed, has an adverse influence on the draft in windy weather.

Regarding the question of the draft producing power of a chimney, a knowledge of the expansion of gases will admit of definite theoretical proportions being arrived at; but theory and practice appear to be very much at variance, and engineers trust more to a practical experience than to theoretical calculations, though in some instances the two are in fair agreement. Increasing the temperature of the atmosphere 1° would increase its bulk 1-523, and by increasing its temperature from 62° to 585° we should double its bulk and reduce its density by one-half.

In a chimney of proper proportions it would be found that the ascent of the gases would be nearly proportional to the square root of the height of the chimney, so that to double the power of the draft by increasing the height of the chimney it would have to be increased in height fourfold. There, however, seems a limit as to height so far as efficiency is concerned, and if this limit is exceeded the efficiency is reduced. This has often been proved by raising chimneys which were previously too small, and it was considered raising would improve them, when the reverse has really followed; while with low, wide bore chimneys raising the tops has been of great advantage. In practice it is proved that by increasing the temperature in the chimney bottom the draft is improved, but not in direct ratio to the said increase, but more nearly as the square root of the increase; while the most useful temperature, taken as absolute temperature, is as 2 to 1, gases to atmosphere. In round figures, it is found that with gases in the chimney at a temperature ten times that of the atmosphere the best condition is attained. If much below or much above this the draft is not so good, and combustion is not so economically affected. There are exceptions to this, but the above may be considered as representing general experience.—*Ex.*

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Valuable Spruces of New Hampshire.

The report of the New Hampshire Forestry Commission contains some interesting matter from Professor Flint, of Winchester, N. H., concerning the distribution of the trees and shrubs composing the New Hampshire forests, and also the bearing of certain problems in geological science on the researches made concerning the way in which the animals and plants of the State were distributed.

Originally a dense forest covered New Hampshire. There were no "parks" as in the Rocky Mountain region, or "oak openings" and grassy plains, as in the valley of the Mississippi. With the exception of a few sedgy swamps, the work of the beavers and some favorable spots near the streams, where the Indians had established their rude cornfields, together with those parts of the White Mountains whose elevation above the sea level gave them a climate too severe to allow the growth of valuable vegetation, there were no breaks in this wilderness. It was a body of forest which, when the white man's axe first began to destroy it, was equal in variety and quality of its timber to any in the northern part of the Atlantic slope.

Two hundred years have so far changed this that, instead of possessing a superabundance of the finest timber, the present generation must consider the best methods of conserving what now remains, and can never hope to see in the present young woodlands timber equal in quality to that of the primitive forest. The old growth remains only in parts of the White Mountain district, and a few localities elsewhere which are not easily accessible.

The black spruce, belonging to the Canadian division of the flora of New Hampshire, is the most abundant conifer of upper Coos, the White Mountain region and the higher parts of the Connecticut-Merrimac watershed. Next to the white pine, it is the most important evergreen, and, with the balsam fir, the last to give way to the alpine White Mountain area. It there becomes dwarfed, with a short trunk 2 or 3 feet high, with dense branches spreading 25 or 30 feet, making a mat strong enough to walk upon. Its timber composes the greater part of the drives of logs which are annually floated down the Connecticut, Merrimac and Androscoggin. It is to-day a far more valuable wood than the pine remaining in the State. Spruce wood is light, elastic and strong, valuable for a great variety of uses, both for inside and outside work; also for wood pulp and paper. In the White Mountain region spruce grows very rapidly, but on the southern highlands, where the old growth has been mostly removed, the younger does not seem to start quickly, and the timber is coarse and knotty.

It is a fact admitted by all observers that the forests of the White Mountain region, composed now mainly of spruce, can never be destroyed by the axe alone. Nature is so vigorous in their reproduction, and the conditions, including altitude, soil and climate, are so favorable to the growth of spruce that it may be well said that if fires are kept out and lumbering is done in a legitimate and thoughtful way, under the dictates of practical forestry, there need be no special limit to the reproduction of spruces in this region.

The white spruce, also a Canadian species, is quite abundant around the source of the Connecticut River, disappearing at the 15 mile falls on that river. It is a medium sized tree, the wood similar to that of the black spruce, but the tree is more symmetrical in outline, with light colored bark and a bluish green appearance to the leaves. It is not near so common or plenty as the black spruce, and hence does not enter into commerce to the same extent.—*Springfield Republican.*

A New Pulp Strainer.

An English patent has been taken out for a pulp strainer in which the straining surface is composed of an indefinite number of solid or hollow and preferably metallic or metallic faced rollers, rods or bars, of various shapes and dimensions in cross section, which are arranged in two or more preferably circular rows placed one within the other, and mounted in a more or less vertical, angular or oblique position within a suitable metallic or other case or frame, in such a manner that the rollers, rods or bars of one row occur alternately with those of the other row or rows.

Each roller, rod or bar is carried upon a pair of suitable bearings, one at each end, preferably but not imperatively borne by the case or frame. Either or both ends of each roller, rod or bar, or such of them as may be found most convenient, may be provided with a toothed wheel, which may gear with a toothed disk or large wheel, caused to rotate by the means of suitable worm or other gearing, actuated by any convenient or available suitable mechanical or manumotive power, and by which the rollers, rods or bars may all rotate in the same direction, or some in one direction and some in another, or it may be found convenient that some may rotate while others are stationary, or that these may oscillate instead of rotate, or that some may rotate while others oscillate, or have an alternate reversing motion.

The pulp to be strained is first deposited within the innermost row of rollers, rods or bars, in a preferably tangential or oblique direction from the feed pipe, and thereby forms itself into a rotary or circular current, and is strained by the thinner, clear or usable portion percolating through the spaces left between the inner row of rollers, rods or bars and their neighbors, from which it would issue (according to the patentees) in a continuous and unvarying stream, without the slightest sign of consolidation or coagulation, without clogging or choking of the straining medium, and without waste of usable material, and this entering the case or frame of the machine would be conveyed directly to the breast vat of the paper making machine, and while the knotty, heavier, or combined portions would, by the action of gravity, be conveyed to the bottom of the apparatus, whereat a suitable discharge valve may be provided, periodically and automatically opened, by the action of a cam, crank, eccentric, or other convenient motion, for the removal of the same, the scum or light particles floating on the top of the fluid or semi-fluid bulk would be permitted to overflow the top or other convenient part of the machine into any suitable or convenient receptacle.

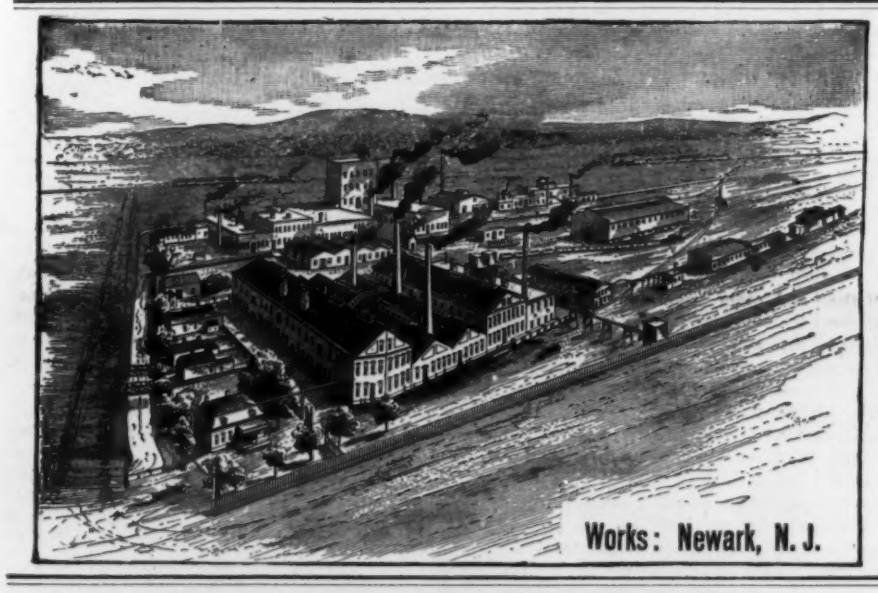
In order that the spaces between the rollers, rods or bars, and their neighbors (and through which the pulp in a workable and usable condition is allowed to pass) may be regulated according to the width of the cut desired, it is provided that certain of the bearings carrying both ends of the rollers, rods or bars may be adjustable, while certain others (preferably those carrying the inner row) may be fixtures. To attain the adjustment of such rollers, rods or bars there is formed upon or attached to the under surface or other convenient part of their respective bearings a lug or projection, provided or engaging with one or more slotted holes or apertures fitted with tightening screws or their equivalents, and by this means such bearings may be brought so close to the fixed bearings that their respective rollers, rods or bars may be in fluid tight contact with each other from end to end, or so divided or separated that the degree of space between them may represent the straining capacity, and suitable means would be provided (which may be that of the before mentioned tightening screws) that when so closed or so parted to the degree required the bearings may be locked in that position for as long as may be desirable.

Soda Crystals.

A new process for the manufacture of soda crystals consists in making crystals of carbonate of soda of a blue or other desired color by adding to or dissolving in the soda liquor prepared for crystal, making a quantity sufficient to give the desired tint or depth of color, of such suitable soluble coloring agent as is best capable of withstanding the action of the alkali, and subsequently separating the crystals in the ordinary manner. It is primarily intended to make crystals of a blue color to neutralize the natural or acquired yellow tinge which materials often possess. The alkaline liquors are prepared and the crystals produced in the ordinary way, and to this liquor, when set for crystallizing, after it becomes comparatively cool, and before the crystals begin to form, the solution of coloring matter is added to and mixed therein, after which crystallizing proceeds in the ordinary manner, the resulting crystals retaining some of the coloring agents.

In the formation of blue crystals the patentees at present prefer to use methylene blue B, as hitherto they have obtained the best results therefrom when employed in the proportion of about one part of the color to about 4,000 parts of the soda liquor. It is to be understood that other aniline or soluble blues—or other soluble colors—unaffected or not discharged by the soda, may be employed either in the above stated proportions or in other proportions that may be found most desirable to give the required tint or degree of color.—*Paper Trade Review.*

If your safety valve leaks slightly do not press down on the lever until after you have raised it and allowed some steam to blow off, as in this way you may remove the cause of the trouble.



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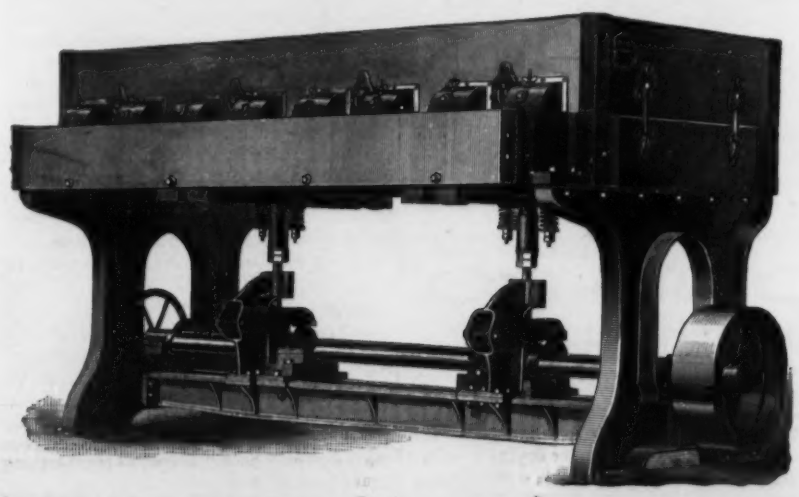

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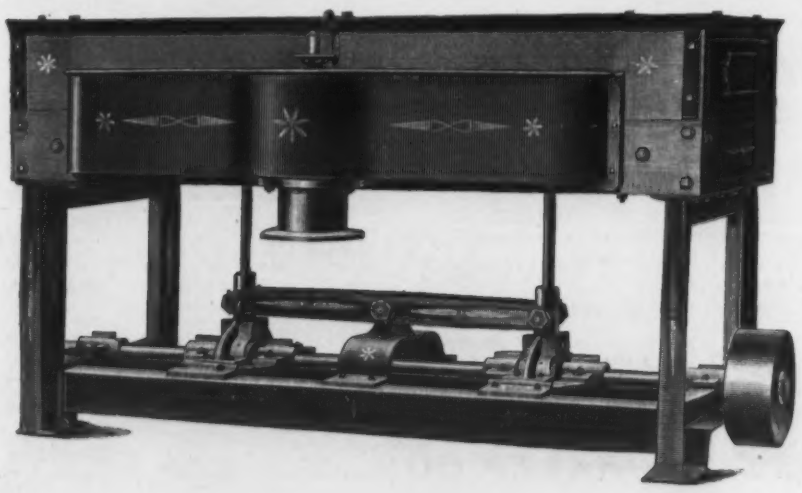

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Storage Batteries at Niagara.

The great Niagara plant has scarcely yet been put to active work, but even at this early stage it may not be premature to discuss questions of the future involving the fullest economical utilizations of this power. The thing above all others which gives the Niagara scheme its value is the permanency of water supply and its never failing continuity. The flow of water goes on uninterruptedly day and night, and in steady volume. It follows, therefore, that to operate only during ten hours of the day would be utilizing less than one-half the power available, with a corresponding non-utilization of the entire hydraulic and electric plant.

It is hardly to be supposed that all the industries that will be attached to Niagara will be operated twenty-four hours per day, and hence the inquiry suggests itself whether some method of storing the energy during the night at the power station or at the factories may not prove economical. Without enumerating the methods which could be employed for this purpose under the conditions obtaining at Niagara, there is little room for doubt that electrical storage alone can fill the requirements. The storage battery must therefore be looked upon as probably the next adjunct to Niagara, and just in what manner it will reach its highest usefulness will much depend upon the nature of the industries to be transplanted to Niagara. What strengthens our belief in the adaptability of the storage battery for Niagara is the character of the enterprise already established there, and that of others which we know are sure to follow and which require the continuous current as an absolute necessity in the manufacture of their products, such as the aluminum of the Pittsburg Reduction Company and others which we might mention.

At present such establishments require an equipment of reducing static transformers and rotary converters to obtain the current suitable for their purposes. The question is a purely financial one and involves the consideration on the one hand of the cost of wheel pits, turbines, generators, static and rotary transformers, and, on the other hand, the rotary transformers and storage batteries of a capacity sufficient to store the energy of the machines required for the day load. The problem thus presented is a simple one. The addition of a storage battery at Niagara, either at the main power house or at the points where the continuous current is required, would thus fulfill the necessity of affording a proper utilization of available energy, and provide two sources and two kinds of currents adapted to all purposes for which the current can be utilized.—*Electrical Engineering.*

When doing a job of piping it is much better to use two 45° elbows than one of 90°, for in that case the corner will not be so sharp and the friction will be much less, especially if it is a water pipe.

Manufacturers and steam users generally should appreciate a good engineer when one is secured. To be entitled to this name requires a combination of good qualifications which are not always found in one man.

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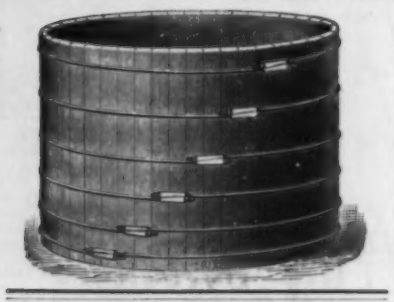

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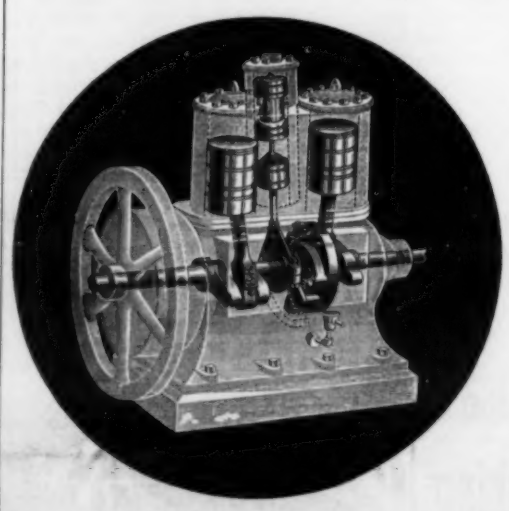
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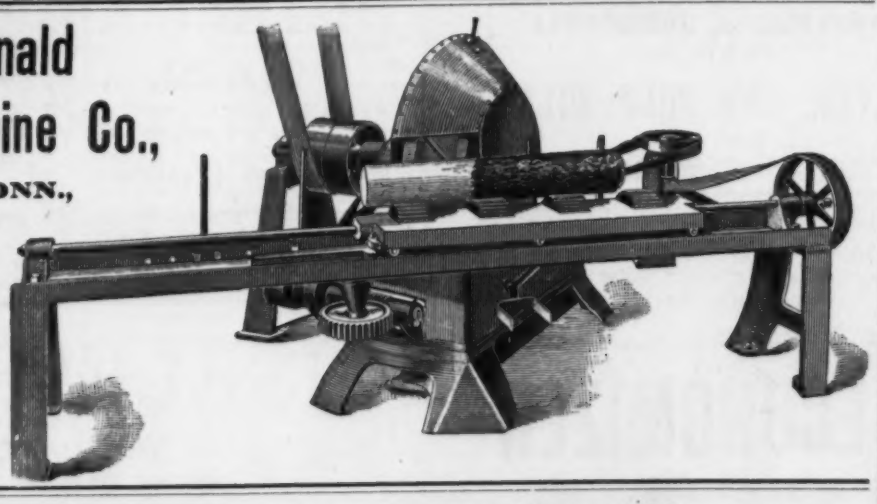

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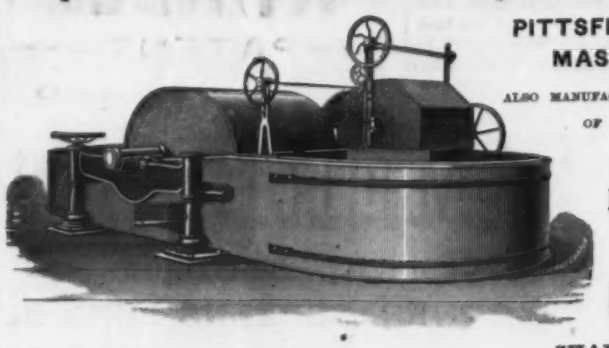
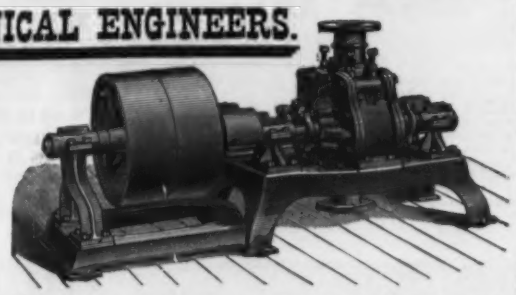
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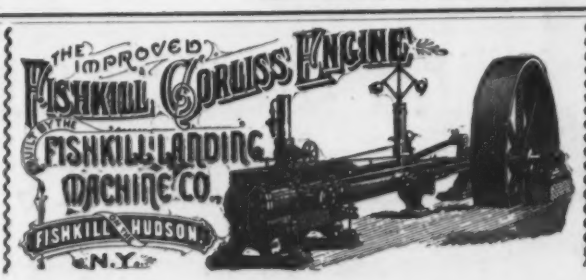

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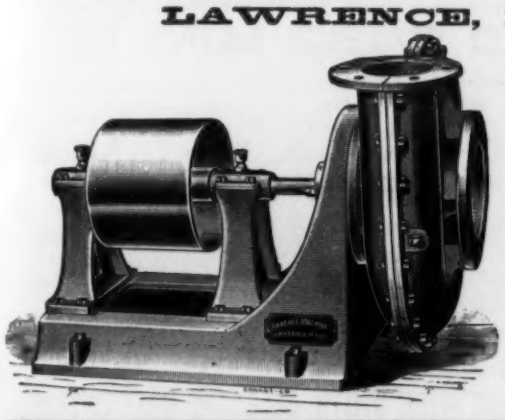

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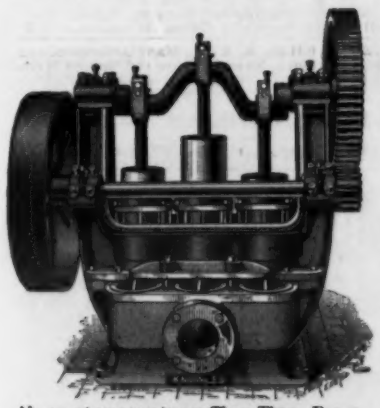

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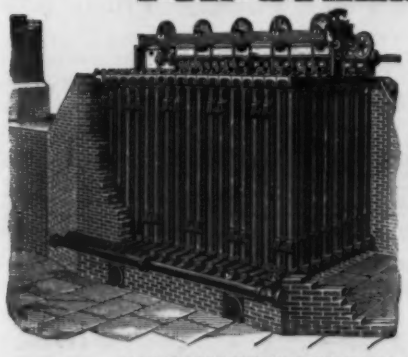

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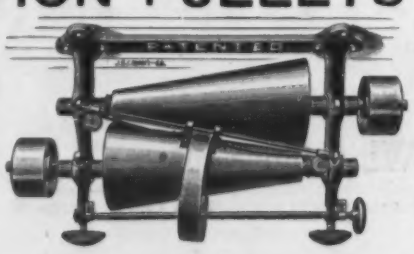

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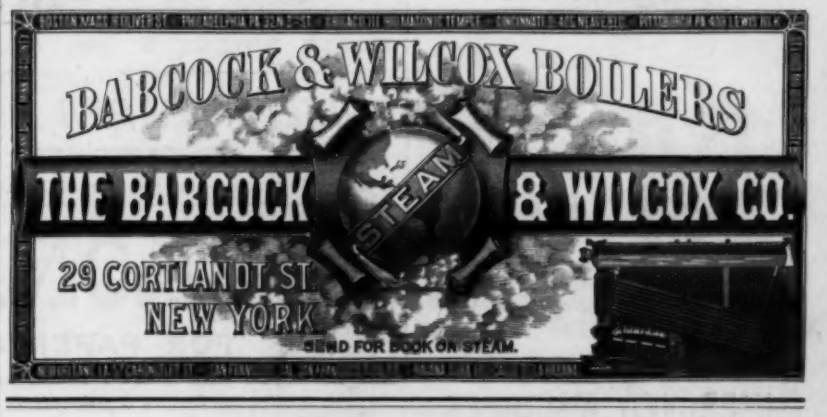

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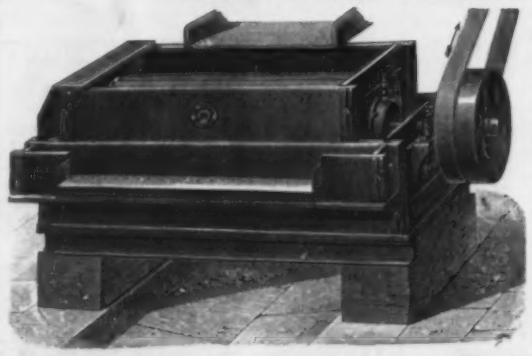

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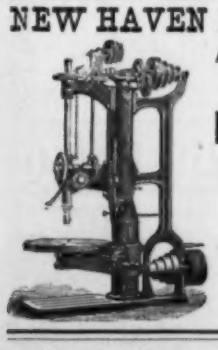

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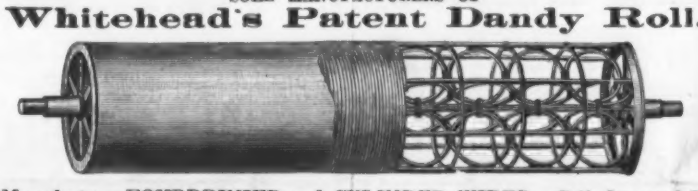

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